ELECTRICAL SOUTH

MARCH
1945

52-In Hotel Type

FANS by HUNTER-CENTURY

58th SEASON

24-In "Airspread" Ceiling

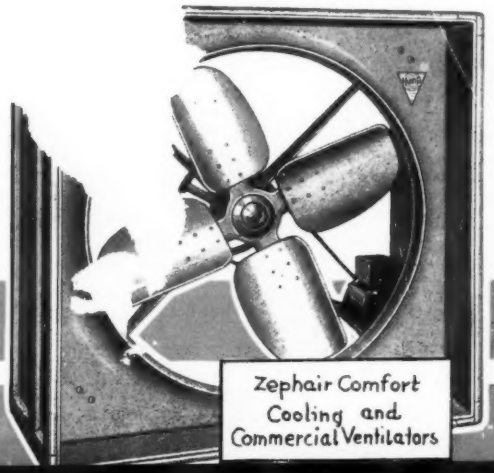
HUNTER, who has made fans and ventilators exclusively during 55 years, is now operating under War Production Board restrictions. • No more fans will be made except for the Army, Navy and Maritime Commission. HUNTER unfilled orders on hand represent contracts with Government Agencies. • Certain belted exhaust types can be made available for Government hospitals and other war industries, subject to limited material inventories now on hand.

HUNTER FAN & VENTILATING COMPANY, INC.

Factory: FULTON, N. Y.

General Sales Offices: Memphis, Sterick Bldg. *Eastern Sales Office:* New York, 92 Warren Street *Western Sales Office:* St. Louis, 1706 Chestnut Street

Sales Offices:
ATLANTA
CHICAGO
DALLAS
HOUSTON
LOS ANGELES
PHILADELPHIA



Zephair Comfort Cooling and Commercial Ventilators

Sales Offices:
BOSTON
CLEVELAND
DETROIT
KANSAS CITY
NEW ORLEANS
PITTSBURGH

To the THOUSANDS of Westinghouse
Appliance Dealers and Service People
who will attend the 1945
CONSERVICE TRAINING SCHOOLS

Wrapped up in a *fast moving* program will be everything needed to help you meet today's

STEPPED-UP SERVICE DEMANDS

Never was the service situation so critical as it is today. Practically all electric appliances are at least three years old. So, for the sake of home front morale, everything possible must be done to keep them on the job.

That's the whole purpose of the 1945 Conservice Training Schools. And the aim this year is to crowd the broadest and most thorough education into the fewest number of hours.

Accordingly, there are no frills to this program. From the sound of the morning bell it's all brass-tack demonstration and discussion.

This will be a two-day school with sessions running either consecutively or at separate times.

First Session Will Be Devoted to All Refrigeration Products

Domestic and commercial models, fixture applications, water coolers, Mobilaires and milk coolers will be thoroughly explained in this busy all-day session. A giant working model of a refrigeration control will be featured.

New Operational Demonstration Boards Facilitate Diagnosis and Correction of Trouble

Interesting demonstration props are employed to explain operating fundamentals and facilitate diagnosis of difficulties. Thus, in true clinic fashion, service people see all problems set up and participate in their solution.

Dramatic 30-Minute Full Color Movie Shows How Good Service Builds Good Will

This informative film takes a serviceman through all the important steps that go to make a satisfied customer and a profitable service call. Packed into 30 minutes is more down-to-earth training than a newcomer could get in months of trial and error experience.

Second Session Will Cover Electric Ranges, Water Heaters and Laundry Equipment

Model by model, the various appliances in this group will be put through their paces. The laundry equipment discussion will be divided into two parts with ample time devoted to the care and maintenance of both the Laundromat and conventional washers.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.

Appliance Division • *Plants in 25 Cities...Offices Everywhere* • Mansfield, O.

30 MILLION PRE-WAR
Westinghouse
ELECTRIC HOME APPLIANCES
YOUR PROMISE OF STILL FINER ONES TO COME

Check with Your Westinghouse Distributor for Dates of Meetings in Your Territory

The Westinghouse field service organization is all set to take to the road. Get the complete itinerary from your Westinghouse Appliance Distributor and make reservations for yourself as well as for your old and new service people.

Tune in: John Charles Thomas, Sunday, 2:30 EWT., NBC. • Hear Ted Malone, Monday, Tuesday, Wednesday Evenings, Blue Network

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Volume 25 Number 3

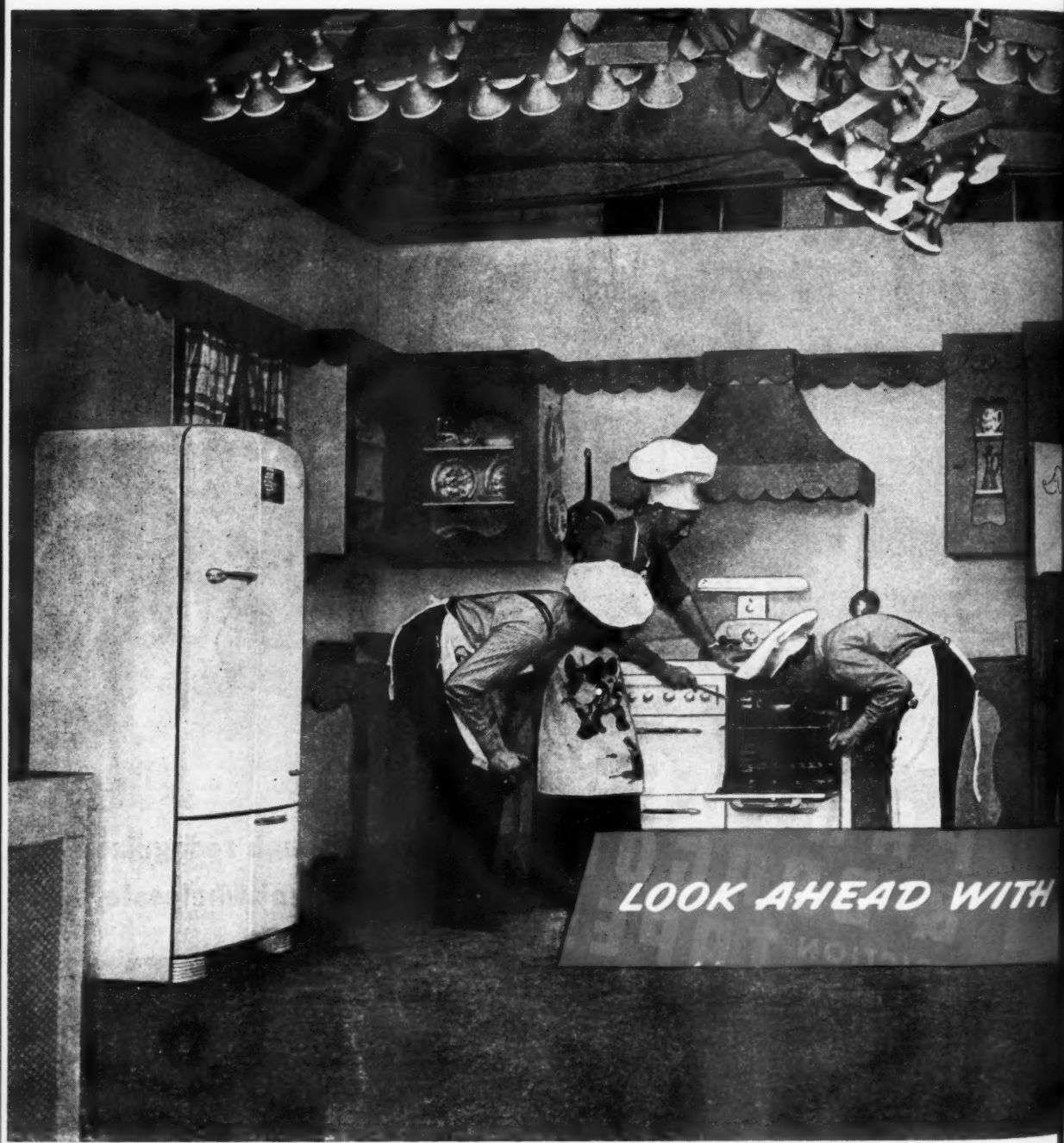
PANTHER & DRAGON FRICTION & RUBBER TAPES

Sold through recognized independent wholesalers

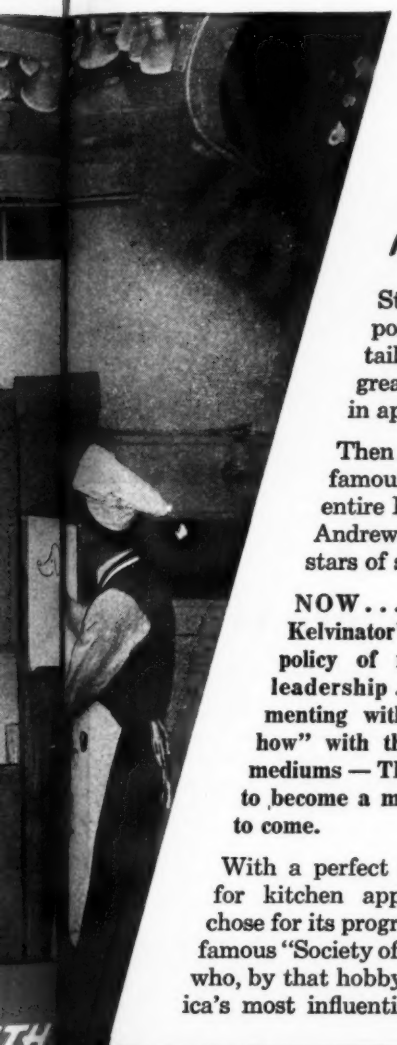
HAZARD INSULATED WIRE WORKS
Division of The Okonite Company
Wilkes-Barre, Pennsylvania

Another Example of
Kelvinator's
"Retail-Minded Thinking"

Television



n Advertising!



Experimental Series Starring "The Society of Amateur Chefs" and famous guests to provide "know how" in use of great, new postwar advertising medium.

Starting months ago to pre-sell a vast postwar market for Kelvinator Retailers, Kelvinator launched one of the great national magazine campaigns in appliance-selling history!

Then... Kelvinator added its already famous weekly radio program over the entire Blue Network . . . starring the Andrews Sisters, plus famous guest stars of stage, screen and radio.

NOW... typically in keeping with Kelvinator's dynamic, forward-looking policy of maintaining merchandising leadership . . . Kelvinator is experimenting with and developing "know how" with the newest of advertising mediums — TELEVISION! — destined to become a major factor in the years to come.

With a perfect merchandising tie-in for kitchen appliances, Kelvinator chose for its program experiments the famous "Society of Amateur Chefs"... who, by that hobby, are one of America's most influential groups among discriminating appliance buyers. Illustration at left is action shot from first Kelvinator Telecast which starred Rube Goldberg and Otto Soglow, ace cartoonists, with Ben Butler and John Reed King.

With this unique show, Kelvinator is at this early date gaining knowledge and perfecting techniques in the use of this new sales medium that may well be one of the most powerful of the postwar world.

Merchandising leadership is another reason why, postwar, retailers with the Kelvinator Franchise will hold "the most valuable franchise in the Appliance Industry."

FOR APPLIANCE DISPLAY

Coming soon—a new book of modern store and appliance department layouts to help Kelvinator Retailers plan for greater sales through better display.

Kelvinator

DIVISION OF NASH-KELVINATOR CORPORATION

Kenosha • Milwaukee • DETROIT • Grand Rapids • Lansing

***TUNE IN:** Every Sunday 4:30-5:00 P. M. EWT for the new NASH-KELVINATOR RADIO SHOW, starring the ANDREWS SISTERS — Over the Entire Blue Network.*

G-E 2-WAY FM RADIO

makes utility maintenance more effective

In fair weather or foul, on any location throughout your circuit mileage, a maintenance truck is never alone when equipped with a G-E 2-way FM radio. It provides each crew with the means for reporting existing conditions back to the dispatcher, for getting help fast, for communicating with other crews on the same job, and for getting new assignments. Two-way radio can bring your maintenance facilities under finger-tip control.

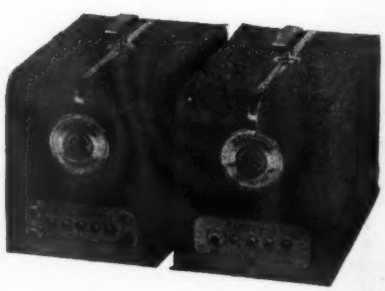
A G-E 2-way FM radio system will give you reliable, long-range communication under the most adverse conditions, day and night. It will enable maintenance crews to serve wider areas in less time and at lower cost. It will help improve your service.

In serving your radio-communication needs, G.E. offers you the same specialized attention that is extended to you in your power-distribution and maintenance requirements. Call your G-E sales engineer when you discuss your communication problems. He will have a specialist assist in planning the most effective system for your installation. *Electronics Department, General Electric, Schenectady 5, N. Y.*

Write for these booklets: "G-E FM Communication System Guide" gives you practical facts about the selection of 2-way FM radio and will assist you in estimating total installation costs. "G-E FM Communication Equipment Catalog" describes and illustrates the required units and accessories.

Hear the G-E Radio programs: *"The World Today" news, Monday through Friday, 6:45 p. m., EWT, CBS. "The G-E All-Girl Orchestra," Sunday 10 p. m., EWT, NBC. "The G-E House Party," Monday through Friday, 4 p. m., EWT, CBS.*

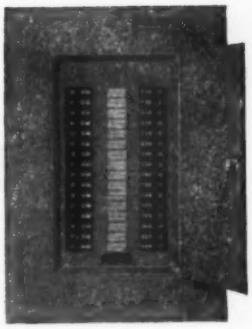
Government regulations now permit new installations of 2-way FM radio for important requirements of utility companies. Let your G-E representative help you prepare your applications.



Everything for 2-way radio communication

GENERAL ELECTRIC

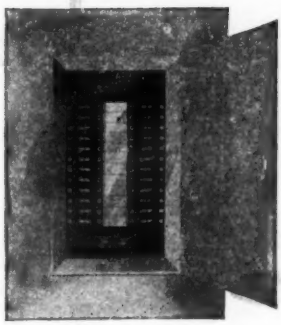
PANELBOARDS for Perfect Performance



Ⓕ A C THERMAG circuit breaker panelboard. 4 to 42 branches. Capacities 15 to 50 amperes, 120 volts AC for 3 wire single phase or 4 wire three phase mains. Standard or narrow column cabinets in surface or flush mountings.

The selection of panelboards for light and power control is more important today than ever before. Additional electrical equipment in offices, factories, and commercial buildings emphasizes the need for adequate facilities in capacity, safety and service.

Ⓕ NAC1B Panelboards, with Thermag (*Thermal-Magnetic*) circuit breakers prevent interruption of service on momentary overload, but provide fast automatic disconnect on short circuit or sustained overload. Nothing to replace when service is broken.



Ⓕ DUBLBRAK circuit breaker panelboard. 4 to 42 branches. Capacities 15 to 50 amperes, 125 volts AC or DC, 2, 3, or 4 wire mains. Standard or narrow column cabinets in surface or flush mountings.

Ⓕ NA1B Panelboards, with Dublbrak circuit breakers have the finest features of thermal trip plus double make and break connections. For speed and convenience in locating trouble, a bright red button hops up when circuits are automatically disconnected.

Ⓕ Leader Type LNT1P panelboard. 4 to 42 branches. Capacities 30 amperes or less, for 3 wire AC or DC and 4 wire three phase mains. Cabinets for surface or flush mountings.

The Ⓕ Leader Type LNT1P Panelboard is made of brown bakelite moulded sections with four heavy duty, single pole tumbler switches and plug fuse connections. A favorite for many years for low original cost and trouble-free operation.

Explosive dust particles can't penetrate the Ⓕ Dust-tight panelboard. Lighting and power control in dust laden atmospheres is assured positive protection by circuit breakers sealed in a gasketed steel cabinet with external operating levers.

Ⓕ DUST-TIGHT panelboard. 4 to 42 branches. Equipped with THERMAG or DUBLBRAK circuit breakers for lighting and appliance circuits. Standard and narrow column cabinets. Also Power panels: 15 to 600 amperes, 250 volts AC or DC and 600 volts AC.

The nearest Ⓕ representative has a wealth of information on panelboards. He will be glad to assist you. Write for his name and address.

Frank Adam
ELECTRIC COMPANY
St. Louis 3, Mo.

Makers of Busduct • Panelboards • Switchboards • Service Equipment

Because of the basic importance of adequate wiring to the entire electrical industry, Anaconda is presenting messages like this in a wide list of national publications.

IT'S YOUR POSTWAR ELECTRICAL HOME

—See that it works!

THINK of your electrified home to come . . . big and little appliances of all kinds . . . advanced heating . . . air-conditioning . . . better lighting . . . television . . . All fine servants—but they will be handicapped if you give them insufficient electrical capacity.

So often electrical wiring plans are based on *past* electrical experience—a poor guide to the needs of peak loads to come. It's far safer to plan *reserve* capacity in line with the huge future increase in electrical usage. You'll save yourself plenty of grief later in breakdowns and expensive alterations.

Manufacturers! Apply this in terms of industrial equipment in *your* business. The problem's the same. Make sure you have ample electrical capacity to meet the huge future increases in electrical usage sure to come. In plants too, planned wiring will cost a lot less than unplanned wiring.

Before structures get out of the planning stage, it will pay to consult electrical contractor, utility power engineer, plant power engineer. They'll agree that it's always wiser to *Wire Ahead!* 44365

ANACONDA WIRE & CABLE COMPANY

25 Broadway, New York 4 . . . Sales Offices in Principal Cities

ANACONDA

It's Always Wiser to TELEGRAM WIRE TELEGRAM AHEAD

ELECTRICAL SOUTH

VOL. 25 MARCH 1945 NO. 3

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Member A. B. P. — A. B. C.

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SOUTHERN AUTOMOTIVE JOURNAL — COTTON
SOUTHERN POWER & INDUSTRY — SOUTHERN HARDWARE

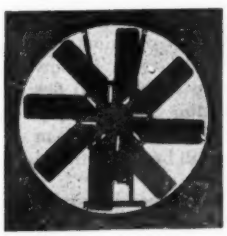
"They say you learn who your friends are when the going gets tough. And there've been lots of rough spots in the last few years for a dealer like me.

"Well, I learned that those boys at Coolair really stick with a guy. They helped me keep going, and serve the war effort too, by feeding me the dope on selling fans to military stations, war plants and essential civilian places. And they could just as easy have gone around me! I did what they said, and they kept the fans coming. Boy, I'm doing all right!

"Learned something else, too. This Coolair fan business is a lot better business than I thought. The way Coolair plays square with any guy who keeps pitching, I figure I'm sitting pretty in the fan picture after this mess is over.

"Yes sir, Coolair sure has helped me plenty!"

Coolair
TRADE MARK



Military and war plant demands for Coolair fans have far outstripped production, in spite of our expanded plant facilities. But Coolair dealers who have been concentrating on government and essential civilian business are cashing in on reasonably prompt shipments of their orders.

A FEW CHOICE TERRITORIES STILL OPEN!

Present and post-war opportunities are excellent.
Write for literature and franchise information.

A full description of the Coolair line, with tables showing models, dimensions, performance data, etc., can be found in
SWEET'S CATALOG — A.S.H.V.E. GUIDE
ELECTRICAL BUYER'S REFERENCE

AMERICAN COOLAIR CORPORATION...Manufacturers

3604 MAYFLOWER STREET

JACKSONVILLE 3, FLORIDA

WHY?

ARE HUBBARD NO. 4-11-44 WIREHOLDERS SO STRONG

When a dead-end load is applied to a Hubbard 4-11-44 Wireholder, the first thing that happens is a close conformation to the porcelain of the Copperweld wire bail, which runs around the wire hole. This distributes a compression load over the largest possible area of the porcelain. *The metal bail carries the load,* the porcelain merely rides the bail like a saddle.

This is evident on observing the construction of the Hubbard 4-11-44. But not so well understood, is how the bail-fastening to the base stands up so well. At first glance it would seem that increased loading would simply straighten out the hooked ends of the bail and cause them to let go. By referring to the diagram it will be seen why this is not so.

As the load is increased at "A" beyond normal strain, the base starts to "bow" up slightly at "D". Immediately the shoulders at "B" and "C" are drawn in against the bail "E", gripping it over a fairly large area, like the jaws of a vise. The harder the pull, the tighter the grip until the ultimate of the bail wire is reached.

*Tests have shown that before the bail breaks the normal mounting would long since have pulled loose. Attached to a solid beam of hard wood one Hubbard 4-11-44 Wireholder will support the weight of a light automobile.

**The full strength of any wireholder will not be developed by a poor mounting. Thin siding, soft splintery wood or loose bricks will give way under a very low strain. Avoid weak mounting.*

HUBBARD AND COMPANY

PITTSBURGH . . . OAKLAND, CALIFORNIA . . . CHICAGO

MAJOR ROLE FOR F-M IN POSTWAR RADIO

Army's "Walkie-Talkie" is expected to prove valuable in peacetime in a wide range of civilian applications.

By Volney D. Hurd*

THE PICTURE of John Q. Citizen using a walkie-talkie system for communicating with his home, office, or field workers, long pooh-poohed by those afraid that the public is being oversold on postwar innovations, is confirmed now by the conservative government body which authorizes all radio activity: the Federal Communications Commission.

The Commission has just laid down the blueprint for postwar radio for some years to come—and it is a fairly radical blueprint because the war has made sharp changes possible. Technical advances which were just getting started were held up by the war. During the war more knowledge has been achieved regarding them. At the same time there has been no manufacturing of such devices for the public and therefore no mass of obsolete goods to get rid of. All of which means radio is on the springboard ready to leap for new broad gains.

Available to All

And most outstanding, because more a product of the war than any others, is the walkie-talkie. A tiny compact radio transmitter and receiver which can be carried easily by any person—using only a few feet of rod for antenna—this device permits good voice communication up to several miles and the range can be extended if necessary.

Postwar use of the walkie-talkie is dignified by the F.C.C. under the title of Citizens Radio Service. In any other form of radio special knowledge and licenses are required for operation. The F.C.C. leaves this type open to all. And while every citizen would not have one, they undoubtedly will be available for anybody who has a genuine need. Professional men and women could keep in constant touch with a central exchange service for emergency calls while traveling in automobiles. Business firms would keep in constant touch with trucks. It is easy to see how much economy could be effected by a store being able to talk to drivers about special returns or side trips, and drivers being able to call back for information on goods that could not be delivered, or asking for relief trucks.

Communication for big construction projects, between headquarters and advance posts, or various self-propelled equipment such as bulldozers, steam shovels, etc., would expedite that work. Fishermen working off the coast, even in the smallest boats, could keep in touch with shore. Thus they would get advance warning of storms, be notified of changes in the market, and be in touch with their homes for emergency calls.

Even the picture of an old-fashioned cowboy loping along with a new-fangled radio antenna sticking up behind him must be considered, for in range work the ability to keep in touch with headquarters would closely integrate the necessarily current loose method of ranch operation. And while out in the fields, the opportunities for radio communication on the great wheat ranches and farms between tractors and harvester combines and the main house, would be of definite value.

Fishermen working off the coasts in the smallest boats can have advance warning of storms.

Even the old-fashioned cowboy may find the walkie-talkie a valuable aid during round-up time.

In the field of sports, mountain climbers and ski expeditions would increase the safety factor of these adventures through a sure means of contact with the main lodge.

In the cities, taxicab service alone would be a great gainer by the use of the Citizens Radio Service. Instead of cabs parked at odd corners hoping for a fare, or cruising the streets for the same purposes, cab fleets could be coordinated for maximum service with minimum wear and tear on men and cabs. These are only a few high lights of what the Citizens Radio Service promises for postwar—and now insured through the F.C.C. itself.

But that in turn is only one part

*Staff writer of The Christian Science Monitor. Reprinted by permission.

of the new radio future just outlined in the latest allocation plan.

FM or Frequency Modulation, staticless, interferenceless and high-fidelity type of radiocasting, promises to be the biggest and fastest-moving development in postwar radio. Therefore it bulks largest in the Federal Communications Commission's current report on the future of radio.

The reason is that FM, of all the new radio developments, had made the most progress before the war. In fact a number of stations were in operation and several hundred thousand sets had then been sold for receiving this different kind of transmission. Add the great amount of progress which the use of FM for military purposes has brought about, and we find this radio system ready for mass production of sets with hundreds of applications for station licenses already on file with the F.C.C., merely awaiting equipment in order to start operations.

Allocation is simply the dividing up, on the fairest basis, of the radio bands available. Fortunately the tremendous increase of radio demand has been paralleled by the opening of new areas in the ether. Otherwise radio expansion would be bogged down.

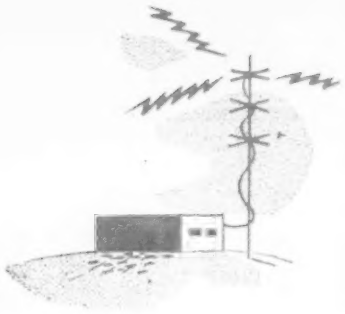
Shorter Wave Lengths

In radio, the expansion of area is achieved by using ever shorter and shorter wave lengths, or more rapid vibrations or frequencies for the carrier waves. As these frequencies increase, finer parts such as tubes, coils and condensers must be developed.

Further new problems arise in transmission and reception which were not present in the lower frequencies now generally used. And FM has run into a major one of these discoveries which calls for a radical shift in allocation. That shift involves putting FM into radically higher frequencies than those allowed before the war. That explains the haste to reallocate FM so this radio infant will not face equipment obsolescence on a large scale at once, a heavy blow that its first new footsteps might not be able to overcome.

The new technical problem worked out as follows: FM originally was supposed to reach only as far as the horizon, it being in a "line-of-sight" frequency band. Thus a station was put high up on Mt. Washington so it could cover hundreds of square miles around it. However, in practice it has been found recently that actually FM has a longer range, up to what is called "three horizons."

To determine this "three-horizon" distance in any given situation, you go



to the first horizon you can see from the transmitting antenna. Standing there, you determine the second horizon and proceed to that point. Arriving there you mark out your third horizon and proceed there. That gives you the "three horizons" distance FM can reach.

Beneficial to Cities

This was very useful, for it meant an extended range which fitted well into most metropolitan coverage areas. But finally, due to Army experiments with FM for military purposes, it was discovered that occasional sky waves would break loose and come bursting down out of the sky some two thousand miles away. Since one of the major purposes of FM is to eliminate interference, this was a major difficulty. It was found to be a natural phenomenon which exists in the present FM 40-to-50 megacycles band, but not in the higher frequencies. So the whole FM band has been put up much higher, where these "sky bursts" are not found.

Another interesting discovery about FM is that by using extra power you can overcome partial horizon effects and obstacles in the line of sight, such as buildings and hills, because you set up a sort of radio glare, much like the light that comes from auto headlights approaching from the other side of a hill. If the glare of the energy radiation is bright enough, it will cause a good FM set to respond even if it is beyond the horizon or hill from the station.

Thus FM will be moved from its present 40 to 50 megacycles up to a band running from 84 to 102 megacycles. This will provide a total of 90 channels. Since FM is a limited-range system it means 10 times as many radio stations can be accommodated for public use as in the present regular broadcast band.

Channels Set Aside

And fortunately, with the radio space available in these new areas, an additional 30 channels will be set aside for future developments. This in turn means that unlike today's radio, expansion will not call always for more crowding into the same space, resulting in the jamming, whistles, and interference which make so many spots on your present dial unbearable and useless.

Another important point is that of the 90 new channels being set up, 20 of these will be given exclusively to educational and non-profit organization purposes Educators long have felt that radio had great possibilities for extending the highest quality of teaching skill in greater or less measure to uncounted millions of students who otherwise never would know the miracle of really good teaching. Now educators are up against the task of really proving they can do the job, for the facilities at last are about to be placed in their hands.

Radio is still an unknown technique except in the present commercial pattern. Its full use—or indeed its limitations—for religious and educational purposes have never been given the research they deserve. From now on this important work may proceed.

School systems must realize that radio education will cost money—the operation of an FM station running from $15,000 to $40,000 a year depending upon its power and the hours used. This is exclusive of talent. A happy combination of good radio teaching and the many civic possibilities of a station should make this an advisable investment in all except the very smallest communities—and in that case, working with near-by centers, helping carry the cost of more powerful stations, should complete the availability of radio education practically everywhere where educators wish to use it.

It can be said authoritatively that present owners of FM receivers need not junk their investment, despite some newspaper stories to that effect. Commissioner E. K. Jett of the F.C.C., long a Commission engineer before he was a Commissioner and therefore technically authorized to speak, says present receivers can be converted to the new wave lengths or frequencies with relatively simple and inexpensive adjustments.

Mobile airport lighting units—the most powerful ever made—are illuminating new or captured landing strips in battle areas. A unit is equipped with four 3,000-watt floodlights. It is mounted on a truck, and is "self-powered"—carrying generators, transformers and controls.

Made His Own Merchandise To Hold His Customers

WHEN people want an electric refrigerator they usually go to the leading electric appliance dealer and ask for it.

That's what happened for months and months after the last electric refrigerator had been sold at the store of Doherty-Stirling, Inc., Baton Rouge, La., dealer in electric appliances for almost twelve years.

"Can't you find me anything to tide me over until electric refrigerators are available again?" is the question all of them asked, and being short of equipment to merchandise Doherty-Stirling decided to try an experiment to do something about the pleadings for refrigerators.

They designed an inexpensive ice refrigerator with door and shelves and formed a production line in their own shop. Most of the work is done by girls and production of the box has been reduced to the fewest motions possible.

Now when customers want an electric refrigerator and plead for something to tide them over, Doherty-Stirling suggest they use this. The cost is small and it will last until refrigerators are available and in so doing they are placed on their list to receive the first electric refrigerators available.

This is a distinct and valuable service rendered the customer that is sure to be appreciated when the customer gets in the saddle again and can pick and choose among the dealers for what he wants.

While Doherty-Stirling does not give the buyer of the utility ice box an actual priority, they do make it known to him that he is considered a prospect for a new refrigerator when the time comes, and that they will want to give him special consideration.

There is a possibility that if the new line of refrigerators has a packed trade-in allowance that these ice boxes will be taken in on that basis.

Of greater commercial value is the deep freeze unit being manufactured by the company and sold for domestic and farm use. The large box provided with two convenient doors has capacity for considerable produce and has been in good demand by farmers who wish to freeze any surplus they may have in poultry and eggs.

They also manufacture a medium priced display refrigeration case for butchers and small stores.

All these boxes are equipped with commercial refrigeration units, a part of their regular line.

During the summer they built a line of attic fans and expect to continue to manufacture them next year as a supplement to their regular line of commercial attic fans.

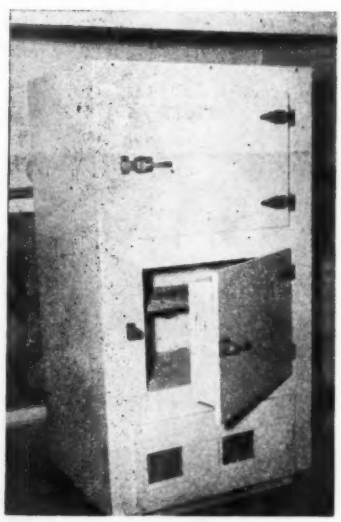
All of the manufacturing activities were a result of shortage of merchandise and were devised as ways and means of keeping the concern in action throughout the war period.

"One of our most important activities, however," Mr. Stirling said, "was to keep our service department going so we could take care of the appliances we had already sold. By doing this, we have held our original customers and know they will come in and buy from us again. Some of the customers that bought from other places will come to us in normal times because they were not properly serviced during the war.

"One of the most important things about staying in the appliance business during periods of adversity is to stand back of the appliances already sold," Mr. Stirling contined, "and keeping this equipment working and the customers satisfied has been of untold value to our organization."

The best prospect list at any time is people known to the store, according to Doherty-Stirling, who think that some dealers have forgotten that all the people who want to buy refrigera-

(*Continued on page 78*)



Home freezer unit made by Doherty-Stirling, of New Orleans, for home and farm use.

Girls manned the production line at Doherty-Stirling which produced the ice refrigerators.

W. M. Stirling stands beside ice refrigerator built to meet immediate needs of his customers.

Fig. 1

Fig. 2

Making Magic With New "F" Lamps

THE NEW CIRCULAR and long thin fluorescent lamps, combined with the sizes and shapes already available, offer infinite possibilities in the design of lighting as an aid to selling. To stimulate thinking along these lines among architects and designers, the Westinghouse Lamp Division has just completed a series of sketches showing a few of the many possibilities that will add beauty and sales efficiency to the interiors and exteriors of postwar stores. Lighting engineers can use these sketches to advantage as a means of showing the merchant who is planning on a new or remodeled place of business some new ideas on modern commercial lighting.

"Lines of light" created by mounting fluorescent tubes end to end should prove very popular. Units may be "pendant" or "surface" mounted, or recessed in the ceiling where structural design permits. The standard line of fluorescent lamp is best suited for general lighting, chiefly because of lower cost and higher light output per running foot. However, circular tubes may be interspersed to add a design motif on ceilings and walls and to add zest and sparkle to semi-permanent displays.

The chief advantage of the new hot cathode slimline fluorescents will be in advertising displays, in showcase lighting, and for locations where long lines of continuous light are needed to harmonize with an architectural design. Because of its thinner shape and additional length, it will be better adapted to many specialized types of lighting than the usual size of fluorescent lamp.

Nor will the incandescent lamp be forgotten. Flood and spot reflector types are admirably suited for highlighting prominent displays. Combined with the general lighting scheme, they may be mounted in the ceiling as "downlights" to add contrast or—with a suitable filter—color. The lighting ideas shown in the accompanying

Fig. 3

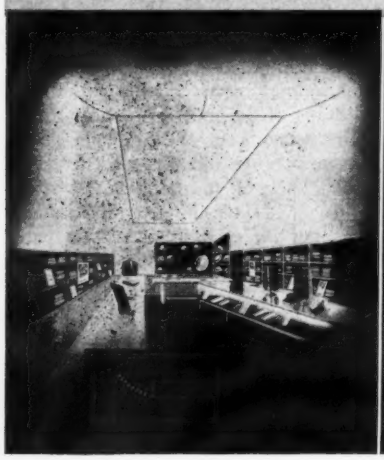


Fig. 4

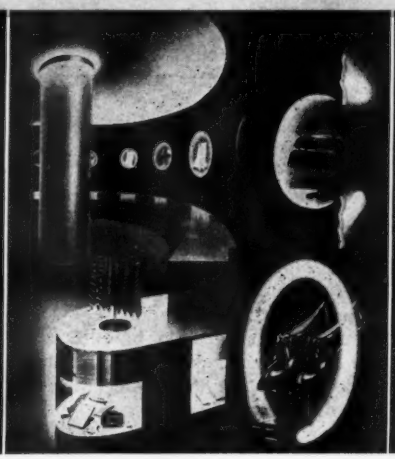
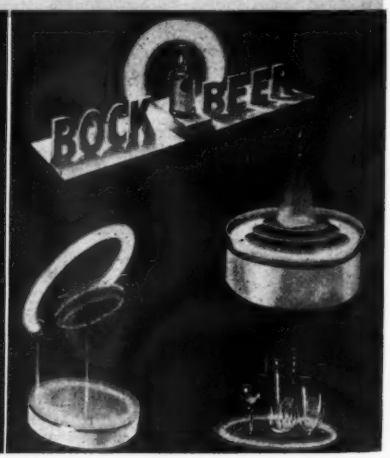


Fig. 5



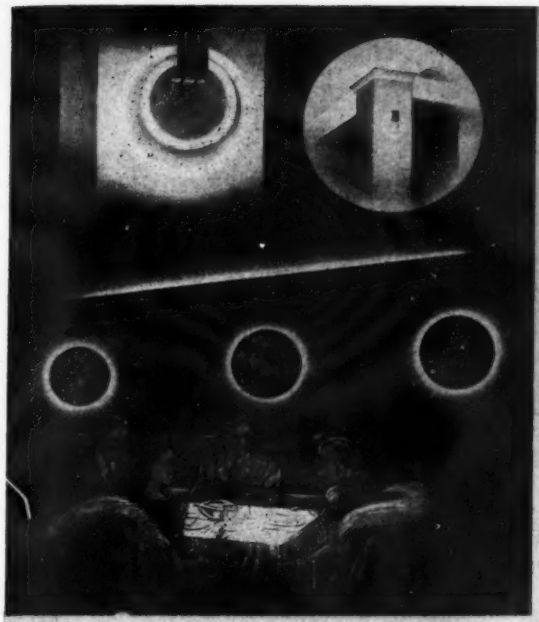


Fig. 6

Fig. 7

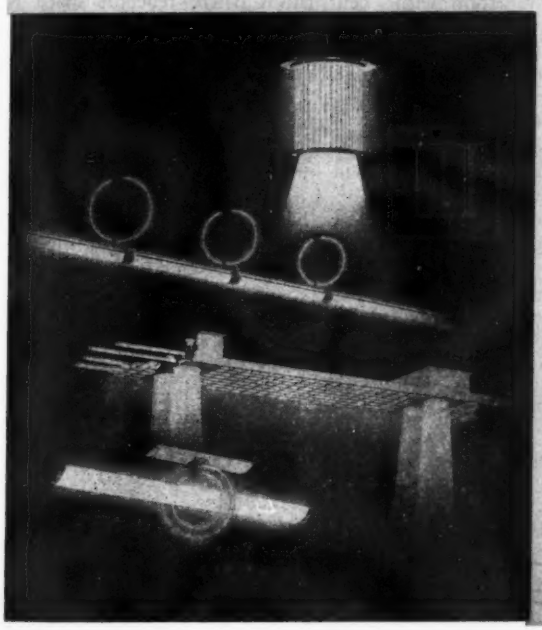


Fig. 8

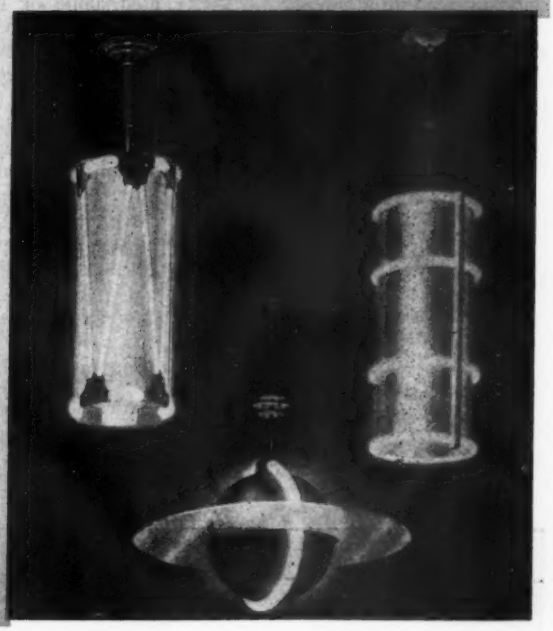


Fig. 9

sketches are described in detail in the following paragraphs.

Figure 1—Fluorescent strips extending from the outside to the inside of this dress shop are a unique deviation from conventional strip lighting. Incandescent lamps, mounted in the ceiling, provide "spots" for "highlighting" featured displays. The result is a store that invites attention.

Figure 2—Here is a novel and effective lighting arrangement for a small dress shop. Colored circular lamps tie together indirect fluorescent strips on the ceiling, while built in units provide auxiliary and display lighting in coves and cases.

Figure 3—Louvred ceiling fixtures arranged in a rectangular pattern put the light in the selling area of this men's haberdashery shop. Either standard tubes or the new long thin lamps are readily adaptable to such a scheme, the choice depending on economics and personal preference.

Figure 4—The circular lamp is admirably suited for show case ends, for "porthole" soffits, or for decorative lighting around columns, as illustrated. It may even be combined with straight tubes to give an effective ceiling pattern.

Figure 5—Circular fluorescent lamps will find many applications in commercial displays, whether it be for adding sparkle to a semi-permanent sign, for glamorizing milady's hat, or for adding zest to a perfume display.

Figure 6—Light for decoration will

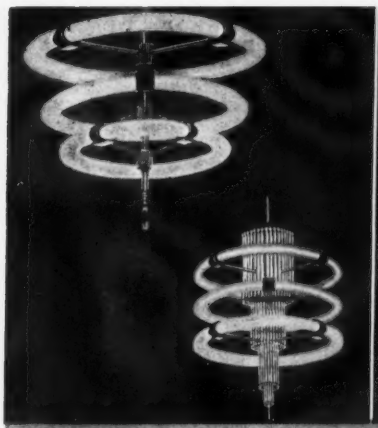


Fig. 10

Fig. 11

Fig. 12

use circular lamps. Here are two suggestions—one using a simple effective design with bare lamps, the other using lamps back of medallions which could be translucent or opaque as shown. Notice the cove lighting above using standard fluorescent lamps.

Figure 7—Circular fluorescent lamps may be combined with other forms of lighting to create effects which enhance the beauty of an interior. In night clubs, theaters, and other places of entertainment, they may be used with incandescent "down-lights" to produce a color motif and decorative effect.

Figure 8—Fixtures designed to give proper illumination and to enhance the appearance of their surroundings are the essential requirements of a good store lighting. Numerous combinations using circular and long thin fluorescents in combination with incandescent lamps for both general and "spot" lighting will give to postwar stores a high level of illumination with an attractive modernistic appearance.

Figure 9—In restaurants, theaters, or night clubs the new circular lamps will add a new lighting dimension by making possible many novel and decorative lighting effects. They may be used alone or in combination with straight fluorescent tubes in designs where "eye appeal" is the main factor and illuminating efficiency is secondary.

Figure 10—"Rings of light" are possible in ornamental fixtures designed for the circular fluorescent lamps. Since the lamps are to be made in three diameters, they can be tiered or mounted one above the other in fixtures, as illustrated in this sketch.

Figure 11 — Circular fluorescent lamps will play a role even in standard types of commercial lighting fixtures. Glass fixtures which give semi-indirect or shielded light will be the most popular. Such a fixture might be "pendant" or "surface mounted," such as illustrated by this slightly modified piece of commercial glassware.

Figure 12—The new line of long thin fluorescent lamps which were recently announced will permit a change of pace in fluorescent lighting design and will make it possible to use fluorescent lamps where reflector space is restricted. They can be used in showcases, or for general lighting in combination with incandescent "down lights."

Figure 13—Incandescent lamps, supplementing straight fluorescent tubes, will be used to highlight displays in the markets of tomorrow. Continuous "strip" lighting offers advantages of higher intensities and a more modern appearance through lines of light. Economics and personal preference will dictate the choice between the present standard fluorescent lamps and the new, long thin tubes which have recently been announced.

Figure 14—This modernistic store front is lighted by floodlights projecting through a translucent canopy.

Fig. 13

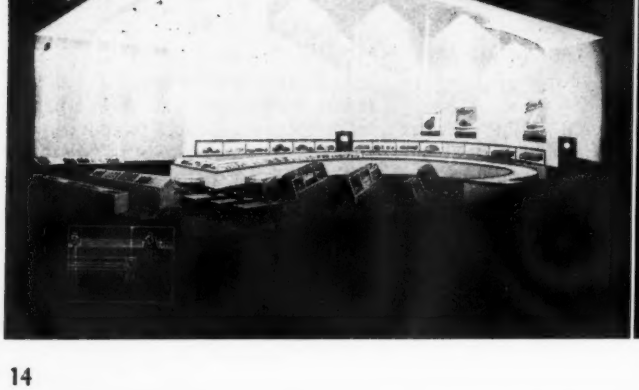
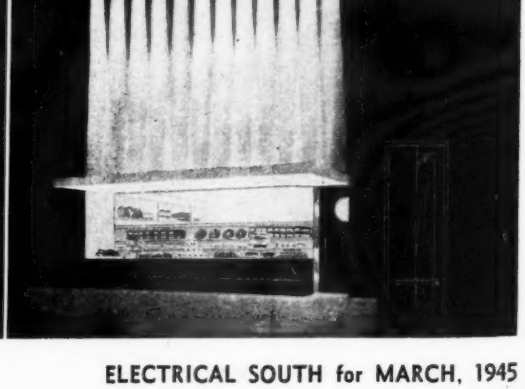


Fig. 14



Peacetime Opportunities Sought Through Air Base Wiring

By Harrie H. Bierman

IN RECONVERTING to peacetime business, at least one South Florida electrical contracting firm, Miller Eletric Company, of Miami, already has much of its spade work done. However, in this case it is a question of conversion rather than reconversion.

In pre-war days, the concern, then managed by its owner, A. W. Miller, majored on residence, apartment house and hotel electrical construction. Came the war, and Miller Electric, like practically all other electrical contractors throughout the South, shifted into war purpose construction.

About this time, Miller turned the active management of the business over to his son, A. F. Miller. The latter, locally known as "Bud," previously had served as field supervisor for his father.

With an eye to postwar electrical contracting possibilities, the firm beamed its efforts, as much as possible, toward types of installation likely to be in active, after-the-war demand. Considering the bright future outlook for peacetime expansion of industry and commercial aviation throughout the South, these two fields appeared especially inviting.

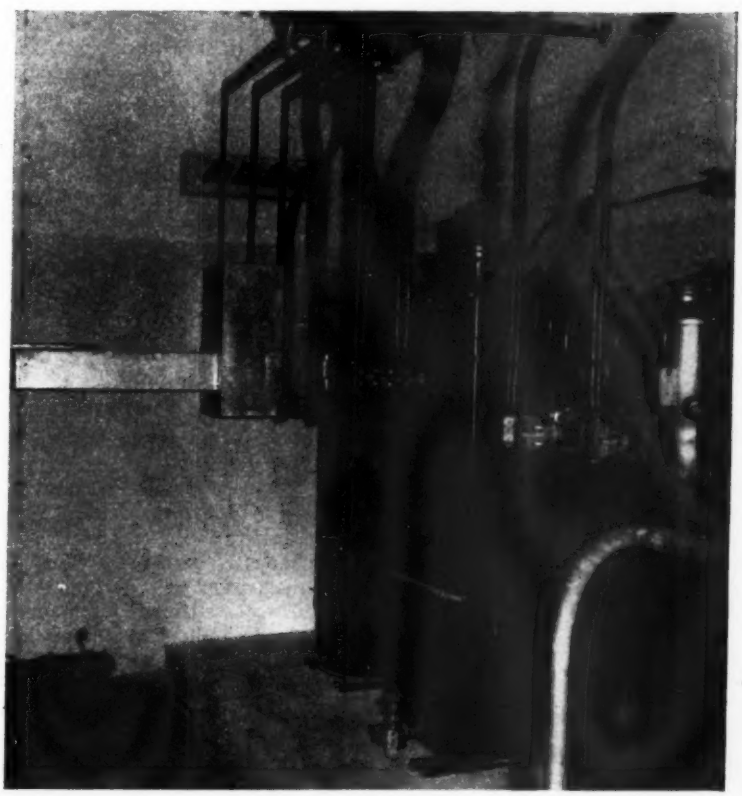
Therefore, during the better portion of the past three years, Miller Electric has been engaged for the most part in electric installation work at Army and Navy air bases in various southeastern locations. Jobs done include wiring for power and lighting and the installation of special electrical equipment of many types.

Not only are practically all such installations suitable for commercial airline operation, but many also are adaptable to industrial plant use. As the result, the firm has piled up a vast amount of invaluable experience in respect to both installation technique and the handling of the more recently developed types of equipment and materials.

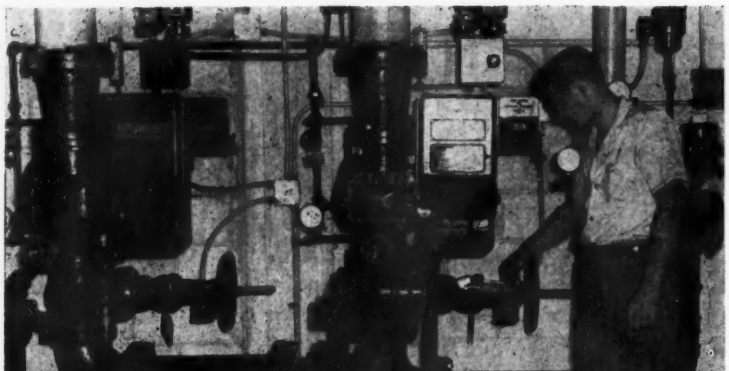
One of the jobs referred to covers installations at a coastal air base for the accommodation of Navy seaplanes. Here, a 180-ft. by 325-ft. building provides housing facilities for plane storage, work shops and administrative offices. To serve these, current for light and power and for the operation of various kinds of special purpose electrical equipment had to be brought in and distributed.

The utility supplies 2300/4160 volts, 3-phase 4-wire service. This comes to a 400 amp., air break switch mounted on a 40-ft. pole. Partly for convenience—but more as a safety provision, if repairs must be made to the primary circuit—this switch is equipped with an extension handle accessible from the ground. Ordinarily, this control is securely locked in the closed position.

From the switch, the "juice" goes underground by way of duct-enclosed, 5,000-volt, No. 6 primary cable to a transformer vault inside the building. Routed via a high voltage pot head and high voltage cutout switches and insulators, the current passes through



Typical transformer installation serving Navy air base. Secondaries are connected for 4-wire, 120/208 three-phase service. Small photo shows details of pipe supported bus bars.



A. F. (Bud) Miller, of Miller Electric Company, Miami, inspects mechanism of thermo-electrically controlled fire protection system installed in a typical Navy air base installation.

5,000-volt, No. 1 flame resistant cable to the primary side of the transformer bank. This consists of two 100 kva and one 150 kva oil-filled transformers.

From the latter to the main distribution center, ¼-in. by 4-in. secondary busses were installed on 1¼-in. pipe hangers with special, rack-mounted hanger-to-bus insulators. Cut into the circuit between the transformers and the main center of distribution is a 1,000 amp. air break switch controlling all current from the primary source.

In order to place the distribution panels as near as possible to the secondary source, and to isolate them from the high voltage primary, they were located in a separate room adjacent to the transformer vault. The secondary distribution system carrying current stepped down to a voltage of 120/208, consists of a main distribution panel and of 3 power and 6 lighting panels.

The latter are grouped into three sections, each of which contains one power and two lighting panels, serving the various portions of the building's interior. Exterior electrical installations draw current directly from the main distribution panel.

Inside the structure, current is required for supplying lathes, drill presses and other machine shop equipment, portable power tools and electric welding apparatus up to 400 amps. capacity.

Plane storage and working space is lighted by 80 ceiling-mounted, combination fixtures, each of which carries a 400-watt B-H1 mercury vapor lamp and a 750-watt, T-24 (medium, bi-post tubular) incandescent lamp. Current to these fixtures is governed by 4 single-pole switches operated by magnetic contactors, controlling 20 fixtures each.

Shop illumination is provided by 60 dual fixtures mounting 100-watt fluorescent lamps and by approximately 100 RLM 18-in., standard dome reflectors equipped with 150 to 300-watt silver bowl lamps. The administrative offices have semi-indirect lighting furnished by 100 to 300-watt Mazda lamps intwo piece, plastic and glass shades.

Outdoor Equipment

Among the base's exterior electrical installations are obstruction lights, ramp lights, power winches and special purpose, plug-in receptacles. The obstruction lighting setup consists of 14 roof mounted, 100-watt, clear glass ruby lamps. Operated by a photo-electric relay, these lamps light automatically, even in the daytime, whenever outside visibility drops below a predetermined point.

Search lights which illuminate the ramp and exterior plane parking areas are manually controlled and are served by duct enclosed feeders coming, in this case, directly from the main distribution panel. Flanking each ramp light is an electric winch, powered by a 10 h.p electric motor, which is reduction gear equipped. This apparatus is employed to haul sea planes from water to land.

Power for operating plane cleaning equipment is taken from a number of 60-amp., 4 wire, exterior receptacles, set into concrete boxes having boiler-plate covers flush with the ground. These receptacles are of heavy duty type with 1¼-in. conduit hub. Receptacles for the purposes intended must be not only weather proof but also impervious to water used for hosing down planes.

Especially noteworthy is an electrically operated fire protection system within the building. Here, any serious fire would be blanketed in a matter of seconds by water sprayed from a possible total of 200 sprinkler heads. These are grouped and controlled in units of 50 heads each. Distributed throughout each unit are 8 thermostatic heads. Each of the latter will automatically close an electric circuit, whenever a given degree of heat is reached.

The thermostatic heads, in turn, operate a 6-in. solenoid valve, which immediately puts into action a water pump, powered by a 50 hp electric motor, magnetically controlled. The installation includes a total of 3 such pumps. And any wide fire-spread, which cannot be controlled by the output of one pump, automatically operates thermostatic heads in one or more additional groups, bringing in one or both extra pumps.

Once the water flow is started by the thermo-electric sprinkler heads, its volume increase or decrease is governed by water pressure controlled mercury switches, actuating the extra pumps.

For a fire which originates, and has a tendency to remain close to the floor, thus failing to operate the thermostatic sprinkler heads, manual control stations are provided. Breaking a small glass panel at one of these stations automatically releases a plunger, closing the circuit to the solenoid. Hooked up to the solenoid circuit are signal horns and red signal lights which give warning whenever the circuit is closed. The system is electrically protected, too, against unauthorized interference. Any attempt to tamper with the valves sounds a warning signal.

The entire fire protection system operates on an independent circuit, carrying current at 440 volts, making it possible to save copper by use of a smaller diameter conductor. Service, in

(Continued on page 76)

IF YOU WANT TO BE A DEALER---

Try this quiz designed to help the prospective retail dealer analyze his qualifications, chances for success.

THE DEVELOPMENT of retail business through the years has been characterized by a broad trail of failures and bankruptcies. Nearly every man at some time or other in his life gets the urge to "go in business for himself." Of the thousands that do, only a relatively small percentage are successful.

Anticipating that thousands of ex-service men and others will be attracted to the retail business field in postwar years, especially in lines which have been given wide publicity such as household appliances, radio and television, the United States Department of Commerce has prepared a special check list for the use of the prospective retailer to determine his personal qualifications for this type of business and to provide a guide by which he can gage the completeness of his business plans.

Although the list has been prepared for the man who is just planning to enter this field, it provides a splendid check for the dealer already established.

"If you are thinking of establishing a retail store, you need to think of hundreds of things," reads the Commerce Department publication. "Careful thought in advance will prevent many mistakes and will help to avoid the loss of your savings. The following check list will suggest some of the questions which should be considered in advance. Obviously this list does not cover everything—no list could. It does suggest some of the more important things and some of the troublesome minor things as well. This list should be used as a starter. Going through it thoughtfully should start your mind working along the right channels and help you make sound final decisions."

Points to Check When Planning To Start a Retail Store

Not everyone can successfully operate a store of his own. Some special knowledge, experience, and "know how" is essential in every line of business. Adequate capital in hand or in sight is also necessary. In addition there are some personal factors which help or hinder the man who wants to be his own boss. Honest self appraisal is always difficult but must be made. The points which follow should help you in your preliminary thinking about starting your own business.

Personal Qualifications

Have you had previous experience in this line of business?

Have you ever bought merchandise before?

Do you know the characteristics of the merchandise you will handle?

Do you have the special technical skills which are needed?

Have you ever supervised the work of others?

Have you ever hired people? Met a payroll?

Have you ever dealt with the public? Do you like to meet people?

Have you ever sold?

Can you boss yourself? Drive yourself to do what is necessary? Are you a self-starter?

Do you have imagination? Energy? Initiative?

Are you willing to work long hours?

Can you overcome obstacles? Fight down discouragement? Keep plugging?

Have you considered working for someone else to get more experience?

Financial Qualifications

How much have you saved which you can put into the business immediately?

How much do you have in the form of other assets which you could, if necessary, sell or on which you could borrow to get additional funds?

Have you some place where you could borrow money to put in the business?

Have you considered saving more money before starting for yourself?

Note: You will want to compare these figures with the more detailed estimate of requirements you will make later.

Income from the Business

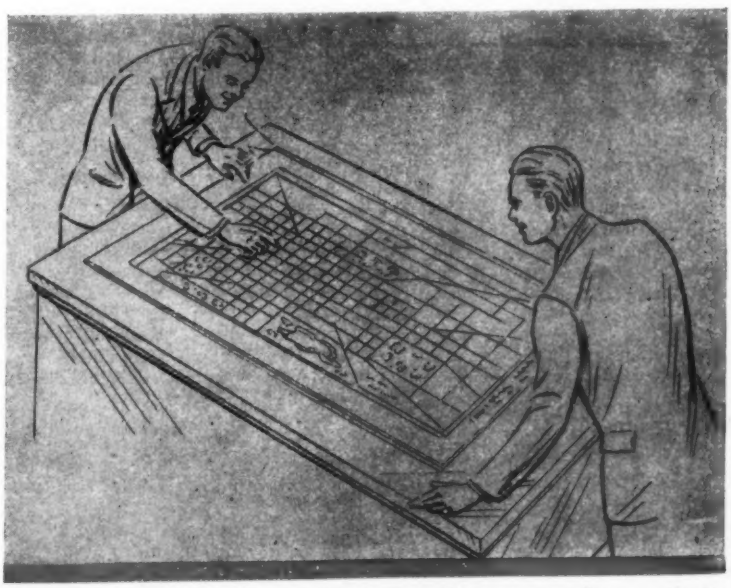
What are your present earnings?

How much can you make as the owner of a store?

Have you compared this with what you could make as an employee?

Are you willing to take lower earnings while getting started? For how long?

Are you willing to risk uncertain or ir-



Now is the time to study store location, trading areas, make an estimate of possible future business, and competitive factors inside and outside the store's trading area. (Drawings reproduced through the courtesy of Edison General Electric Appliance Company.)

regular income for the next year? Two years?

Note: When more specific estimates are made you will want to review these questions.

When to Start Business

Are general business conditions good or bad?

How are conditions in the line of retail business you are planning?

Have you made a forecast of the business outlook for the next year?

Is your personal situation right for a start now? Your age? Your present job? Your future prospects? Your family responsibility?

Points to Check When Deciding On the Location of Store

Operating a store in the right place contributes to the success of the store. Living in a place he likes helps the owner to be happy. So the choice of a location is both a business and a personal problem. It is necessary to consider many things when deciding if there is an opportunity for you in a particular location. Sometimes it is necessary to choose one of several locations, or which of several stores to buy, or between buying a store and starting a new one. Your decision on these questions will be easier if you organize your thoughts. Putting the main favorable and unfavorable points down on paper will help you to compare different locations.

Economic Factors

Are the industrial or agricultural conditions good?

Is the trend up, down or stationary?

Is the source of the community's wealth well diversified and varied or is it a one industry community?

Are the major industries old and well established, new and growing, or recent and uncertain?

Are the industries stable or subject to wide fluctuations?

Is the economic outlook for the community promising, uncertain, or poor?

Is the population of the community growing, standing still, declining?

Is the wealth and income of the community well distributed? What proportion of the families are wealthy, well-to-do, moderately well off, poor?

Are transportation facilities, professional services, banking facilities, schools, and so on good, adequate or poor?

Are the civic associations aggressive, adequate, stagnant or poor?

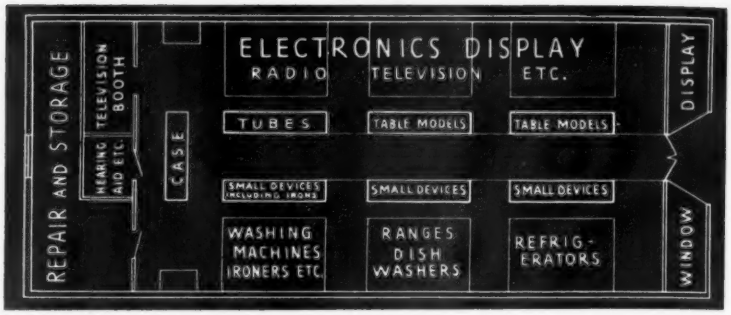
Need for a New Store

Have you canvassed the community to determine the number of stores of this type now operating?

Have any stores of this type closed recently? Why?

Are the stores which are in operation busy?

Is the public adequately served by the present stores?



Here is one possible arrangement for handling all five groups of appliances in a one-room store. The arrangement should be flexible so that specific appliances can be given more space during certain seasons.

Are people now going out of the community for the products you would sell them?

Is another store in your line needed?

Competition

Do competitors leave an opening for you to enter business because they are not alert and aggressive?

Are competitors old and well established?

Are competitors' stores modern and attractive?

Will competition be strong and active or weak and sluggish?

Do you have a competitive chance?

Advice from Others

What do the wholesalers think of the prospects for a store in this community?

What do the manufacturers' representatives think of the prospects for a store in this community?

Have you talked to a banker? What does he think about your plan?

Would he think enough of the venture to loan you money?

What do local businessmen in non-competing lines think of the prospects?

What do the representatives of the companies selling store equipment or fixtures think of the prospects for a new store in your line of business?

Buying a Going Business

There are some additional points to consider when buying a going business:

Why does the owner wish to sell?

Have you checked his claims about the business with his copies of his income tax returns?

Are the sales increased by conditions which are not likely to continue?

Have you consulted a lawyer to be sure that the title is good?

Has your lawyer checked the public records to see if there is any lien on record against the assets which you are buying?

Are there any accumulated back taxes to pay?

Is this a bulk sale? Has the bulk sales law been complied with?

Does the present store have good will to offer or are there many people in the habit of not trading there?

Is the stock a good buy? How much would have to be disposed of at a loss? How much is out of date? Unsalable? Overvalued?

Are the fixtures and equipment the modern type you would select now? Or would they be unsuitable? Overvalued? In poor condition?

Are you going to buy the accounts receivable? Are you sure they are good? How much are they worth?

Would you assume the liabilities? Are the creditors willing to have you assume the debts?

Points to Check When Starting Your Store

The points in this section are set forth on the assumption that you have decided to start a store of your own and have selected the community in which to operate it. Before opening the doors some decisions have to be made and some plans prepared. Here it is necessary to think again about some of the things you considered earlier. And for that matter, some of the things considered here might also suggest points which would modify your decision to start now, for example, the financial requirements. Or the services offered by others, as another instance, would suggest the decision you should make as to what services to offer if you are to have the best opportunity in that community. So, just because this list is divided into sections shouldn't prevent you from looking at it as a whole, or even skipping back and forth through it.

Building and Its Location

Is the site good for this type of store? Are there other similar stores nearby? Are most of the passersby potential customers? Is the section zoned for commercial occupancy?

Is the space adequate? For present needs? For future needs?

Is the space too large? For present needs? For future needs?

Are the display windows suitable?

Is the front modern and attractive?

Is the entrance at grade level? Wide enough?

Is there storage space for reserve stock?

Is there a rear or side entrance for deliveries?

Is the construction sound? Attractive?

Will any major remodeling or alterations be necessary?

Are there enough electrical outlets for your purposes?

Are the plumbing facilities adequate?

Is there a satisfactory heating plant?

Are there any built-in fixtures or equipment you can use?

Rental Terms

Is the term of the lease long enough to protect you? Even if you make major alterations?

Are there provisions in the lease for cancellation? For sub-leasing? For renewal?

Does the lease provide for reimbursement for alterations?

Is the rent a fixed dollar amount? Or a percentage of sales?

Is the amount of the rent in proper proportion to the estimated sales?

Equipment and Fixtures

Of course the money available and the cost of the equipment and fixtures will limit your freedom of choice. But the more limited the funds the more important it is to plan well. The following questions may help in this planning.

Have you determined your equipment needs? Your fixtures?

Have you planned for expansion and future additions to your equipment? To your fixtures? Can additions and replacements be easily and harmoniously made?

Have you held your purchase plans to the minimum? Without omitting any essential items?

Are your fixtures and equipment properly suited to the needs of your store? To the lines carried? To the customer appeal?

Is your investment in fixtures and equipment in proper proportion in your financial structure?

Are you going to pay for the equipment or fixtures on the installment plan? Have you decided the maximum monthly payment you can safely contract to make?

If buying fixtures and equipment as a part of the purchase of a going business: Are they a good buy? Is there a lien on them? Are they similar to the modern type you would select now? Have you checked to make sure they are in good condition? Do you need all of them in your operation?

Planning Your Stock

Have you estimated how much your total stock should be?

Have you broken this estimate down into the major lines to be carried?

Has your stock selection been guided by an analysis of consumer preference in your community?

Have you set up a model stock assortment to follow in your buying?

Have you worked out any stock control plans to avoid overstocks, under-stocks, out-of-stocks?

Have you made arrangements with wholesalers? For each line of goods?

Have you decided what merchandise you will buy from manufacturers?

Are there any lines of goods which you can get the privilege of handling exclusively? What are the franchise arrangements?

Have you considered affiliating with a voluntary or cooperative group?

Have you planned to make your account more valuable by concentrating your buying?

Selecting Your Help

What is the method of paying employees in the community?

What is the prevailing wage scale? What do you plan to pay?

Do you want to hire men, women, part-time, experienced, or inexperienced people?

Are satisfactory employees available locally?

Would it be advantageous or disadvantageous to hire someone now employed by a competitor?

What skills are necessary?

Will employees supply skills you lack?

Accounting Records

Have you planned a bookkeeping system?

What additional records are necessary?

Do you have a cash register? Adding machine? Other recording devices?

Do you need any special forms of records? Can they be bought from stock? Must they be printed?

Are you going to keep the records yourself? Hire a bookkeeper? Have an outsider come in periodically?

Store Policies

Have you decided your service policy? Are you going to deliver? Are you going to sell for credit? Are you going to operate on a self-service basis?

Do most of the other stores in the community offer full services or do they operate on a cash-carry or limited service basis?

Is your best opportunity to offer more services, or to make an economy appeal?

What will be your returned goods policy?

Do you have the additional capital necessary to carry accounts receivable or to buy delivery equipment?

Have you considered store policy in selecting lines?

What lines do competitors carry?

What lines are lacking which customers would buy?

Do you have the capital and space to carry all the lines carried by competitors?

Do you have the capital and space to carry any lines not carried by competitors?

Have you considered the profit possibilities of the various lines?

Do you have the knowledge and experience necessary to handle the various lines?

Have you decided on your price policies? Are you going to make a price appeal? What price appeal do competitors use?

Are you going to compete on price, or quality, or on service?

What price ranges would best appeal to most of the people in the community?

Have you decided on your store hours? What hours do competitors remain open?

Would you attract trade by opening earlier? Remaining open later? Being open on Sundays or holidays?

Will you have the personnel to be open on these hours or days?

Have you decided on your promotion policy?

Are you going to do outside selling?

Are you going to advertise in the newspaper?

(Continued on page 76)

This simple display gives any looker nearly every essential fact that a salesman would give her: time, costs, work done, and quality of the work. Scientifically conducted experiments prove that display is greatly improved by proper arrangement, props, examples of work done and display cards.

SEARCH IN

Here, the moisture-permeability of a synthetic is tested, over a time period, under conditions equivalent to years of difficult service... one of a multitude of separate explorations.

SYNTHETICS

Here, new and surer insulating performance is the goal of a great Research Laboratory.

How most effectively to use the new materials? Which synthetic polymer is best for insulation in dampness? How improve the vulcanization of butyl rubber? How get both high tensile strength and low temperature flexibility in Buna S? . . . In the General Cable Research Laboratory, most completely equipped and manned institution in the world devoted exclusively to wires and cables, a tireless group of scientists is seeking and finding the answers to a host of urgent, practical questions. The work being done opens new vistas of product serviceability in many fields.

GENERAL CABLE CORPORATION

Manufacturers of Bare and Insulated Wires and Cables for Every Electrical Purpose

A DIGEST OF SUCCESSFUL SELLING IDEAS

THE SELLING PARADE (REGISTERED)

BY CHARLES B. ROTH

BEDROCK ESSENTIALS

JUST BEFORE he died—and his death at so young an age was a loss to American business—William Maxwell, who had been sales manager for Thomas A. Edison, listed eight bedrock essentials to success in selling.

Because he was such an authority and had spent so much time in thinking about selling and was so successful in it, these bedrock essentials could be learned and practiced by any salesman who wants to do better with his opportunities.

They are:

1. Proper handshake. Not too hard, not too limp; just a hearty, friendly, decorus grip of a man who's glad to see another man.

2. A sincere smile. Which means a smile that involves eyes as well as lips.

3. Erect posture. You can't slump and sell, said Maxwell.

4. The right voice tones. Nothing excited. Just a level tone of confidence and sincerity.

5. Careful pronunciation. Pronounce every word so that the other man can understand every syllable you utter.

6. Physical and mental alertness. This can be cultivated. Must be cultivated.

7. Self-confidence. You have to believe in your own star or it will never dazzle the eyes of anyone else.

8. Thorough preparation. Know everything you can about your business, his business, about your goods, his problem.

I've tried for years to find something complicated about the selling process, but to save my neck I can't. It's made up of simple things, like William Maxwell's eight essentials.

ARE YOU GROWING?

One of my friends, a remarkably intelligent and enterprising chap, who has taken over the helm of a business and guided it successfully to greater heights, revealed one of the reasons for his success at lunch the other day.

It's a mental growth test he and his executives give themselves each year.

There isn't anything intricate or outlandish about it; just a simple commonsense practice which I believe any salesman could take up and follow.

He merely re-reads letters he wrote a year or two years before to see if he has fallen into the habit of repeating himself and writing in terms of tiresome, stilted words and phrases.

He argues: "All of us, unless we're mighty careful, develop lazy mental habits when we talk or write, and then we stop growing.

"It's only when we compare ourselves now with ourselves in the past that we can see whether we are growing or stagnating."

Here is a good plan for every man who sells. Check up on your sales talks.

To do this you'll have to think about how you were expressing yourself to customers a year ago or two years ago—get some mental pictures of the guy called you and see yourself as someone else sees you. Were you interesting then? Are you more interesting now? You should be. You should have grown mentally in the past year.

A good many salesmen, unfortunately, get into a rut early in their experience and stay there as long as they live.

But wise men and women detest ruts.

If you check up and become dissatisfied with yourself and the way you express yourself and try to improve all the time, you'll keep out of ruts.

ONE POSTWAR "MUST"

There's one thing for every salesman to keep in mind during the first months of the postwar world, for which we have all waited so long.

It is that more than ever he must know what's going on and be able to tell his prospects and customers about it.

Many prospects rely upon the salesman for news of prices, probable changes, conditions. The first thing they ask him is, "What do you know?" Then they become specific and ask definite questions, "What do you hear of changes in Washington?" "What is the market likely to do during the next six months?"

A salesman who doesn't fit himself to answer these questions expertly is passing by one of his best bets to get business and customers in the postwar years.

Dealers should, of course, read trade magazines more. Few do. But salesmen can, and as a result can take a place in the customer's life that no one else or nothing else does.

Once you win a man's confidence by knowing what he wants to know and proving to him that your dope is straight, you have him just where you want him so far as making sales is concerned.

For prospects and customers are like the Chinaman who owned the little

For Profitable Postwar Appliance Merchandising

Look to the Pioneer

The first practical electric range, "granddaddy" of all Hotpoint products... was invented by George A. Hughes, late chairman of the board of Hotpoint.

FOR 40 YEARS

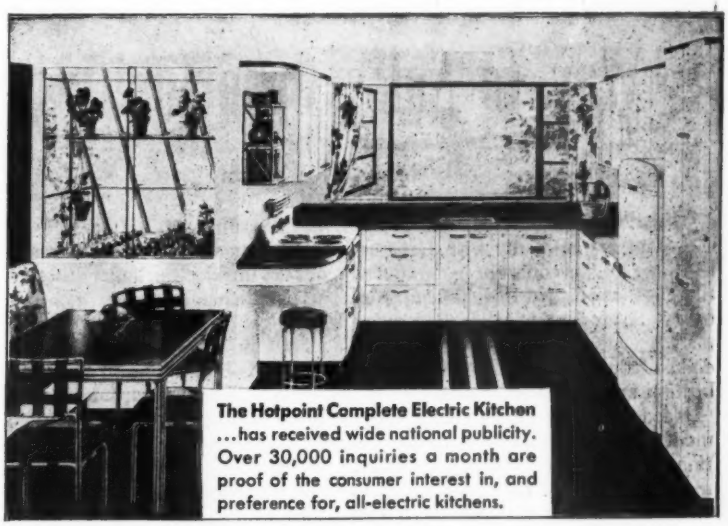
HOTPOINT has consistently lived up to the standard of *quality first.* Research and invention by skilled technicians resulted in Hotpoint leadership in the manufacture of electrical appliances. "Time-Tested" dependability for 40 years is your assurance that the Hotpoint products of tomorrow will not be "postwar babies." The all-electric kitchen is the scientific outgrowth of the first electric range.

AND TODAY

... after 40 years of progress Hotpoint offers you an opportunity to plan and build a retail appliance business, for the present and future, on a dignified and profitable basis through their selective dealer franchise plan— "a selective dealer for a specific market... a specific market for a selective dealer."

Edison General Electric Appliance Co., Inc.
5614 W. Taylor Street, Chicago 44, Illinois

Hotpoint Dependability Assured by 40 Years Experience



The Hotpoint Complete Electric Kitchen ...has received wide national publicity. Over 30,000 inquiries a month are proof of the consumer interest in, and preference for, all-electric kitchens.

HOTPOINT REGIONAL SALES OFFICES. EASTERN: 570 Lexington Avenue, New York City 22, Plaza 3-9333. SOUTHERN: 304 Red Rock Building, Atlanta 3, Walnut 2959. CENTRAL: 1456 Merchandise Mart, Chicago 54, Superior 1174. WESTERN: Western Merchandise Mart, 1355 Market Street, San Francisco 3, Underhill 2727.

HOTPOINT
Electric Kitchens

REFRIGERATORS • RANGES • WATER HEATERS • HOME FREEZERS • WASHERS AND IRONERS • CLOTHES DRYERS • DISHWASHERS • DISPOSALLS • CABINET-SINKS • STEEL CABINETS

bark that Captain Davidson sailed, "Once a Chinaman becomes convinced that you are a straight man, he gives you his unbounded confidence. You simply can't do wrong, then. And they are pretty quick judges of character, too," remarks Joseph Conrad in Captain Davidson's story.

Paraphrase that and use the word "customer" in place of "Chinaman," and you get the real reason why every salesman should do his best to keep his customers reliably informed during the months and years just ahead.

CALL, DEMONSTRATE, SELL

During the past few months, oh, maybe the past year and a half, the sales manager said he believes, many salesmen have forgotten what no salesman should ever forget—the relationships of the different parts of his job.

That sounded interesting, so I asked the sales manager to explain.

"There isn't much to explain," said he. "But no salesman should ever lose sight of the fact that his job consists of three parts or phases. If he keeps all three in mind, he sells. Trouble is, lush, easy times like we've been having cause some smart men to forget some of these phases."

I asked the sales manager to outline the three phases so I could tell them to you.

"You're expecting something new," said he, but I denied this, for I know there's very little new in selling, if anything.

"What I'm going to tell you is old, old stuff. But it seems to me that three words are all a salesman needs to keep ahead of him. The words are: call, demonstrate, sell.

"After all, what else is there to selling besides these—call, demonstrate, sell? It's the selling chorus, if I may use a corny paraphrase.

"A man has to make calls; some salesmen have got clear out of the habit; hard times lie ahead for those men. They have to demonstrate, because one demonstration is far more effective than many words. And they have to get orders, since that is the next logical step.

"And that's all there is to this whole game we call selling—call, demonstrate, sell."

Smoke Abatement Program Opens Way to Sales Opportunities

By Geo. H. Watson

SELLING smoke eliminating equipment is a specialty with Douglas-Murray Co., air conditioning and ventilating specialists of Birmingham, Alabama. Several such sales have been made recently making use of the principle of over-fire air to improve combustion and eliminate smoke.

Need for smoke eliminating equipment in Birmingham arose in connection with a city ordinance which makes it unlawful for any concern to allow smoke of more than a certain density to emit from its smokestacks. As Douglas-Murray sells soft coal (as well as coke) it was deemed wise to help their customers with the smoke problem. So working closely with T. W. Lankford, city smoke inspector, they devised equipment which eliminates about 98 per cent of the smoke.

The equipment as sold and installed by this concern is simple. It consists of a motor-driven blower unit, hooked up to a steel manifold with nozzles. The fan and motor are placed outside the boiler and the manifold with its nozzles inside the boiler, so that the air is discharged a few inches above the fuel bed. The manifold is normally placed in the back of the boiler, so the air is blown toward the fire door.

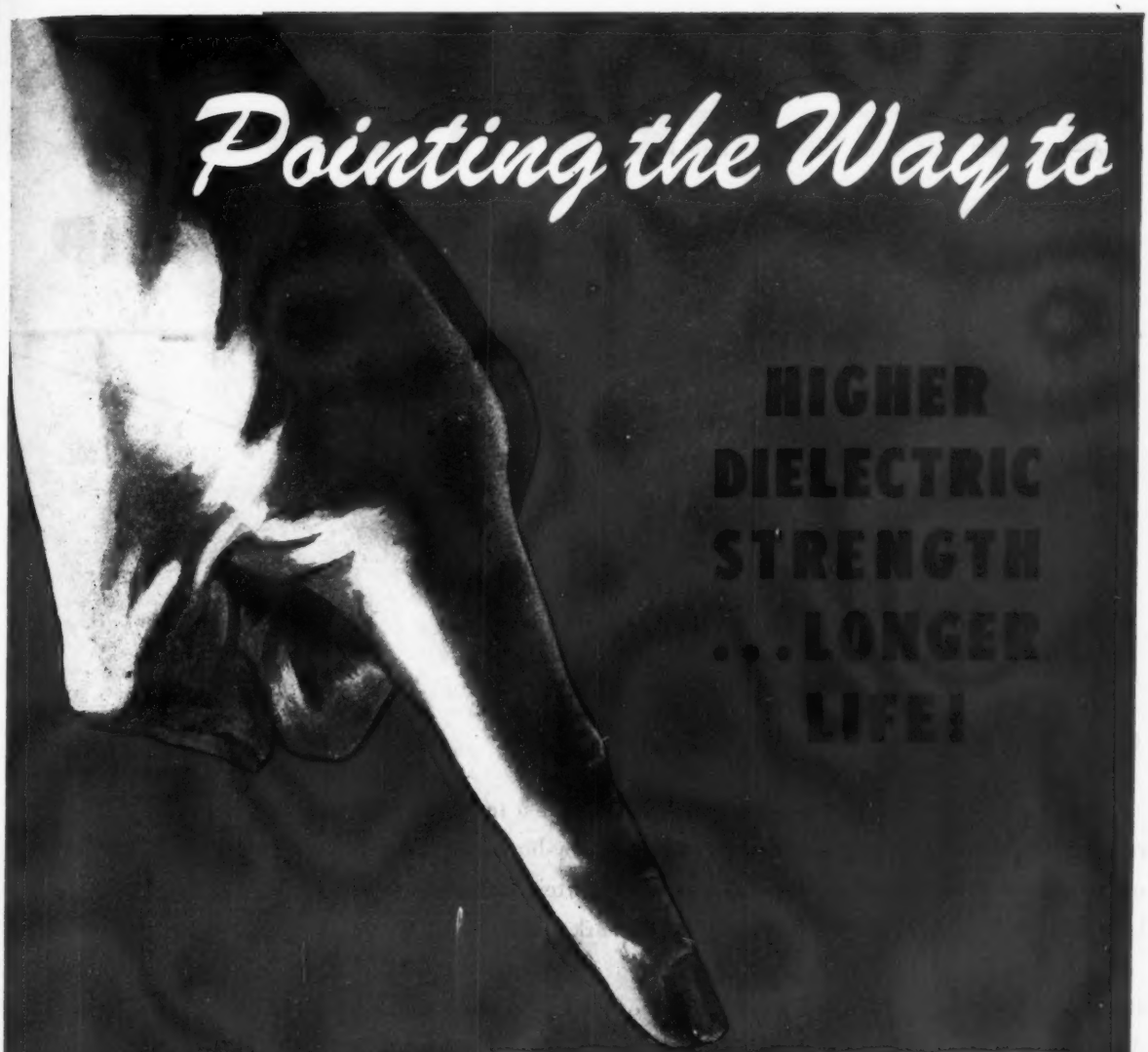
As explained by Edward T. Douglass, Jr., member of this concern, the air injected at high speed cuts through the natural updraft in the fuel bed and creates a turbulence which is conducive to complete combustion. This extra turbulence prevents stratification by breaking up the carbon dioxide gas which tends to blanket partially consumed combustible gases. Besides eliminating smoke, this over-fire air also improves the efficiency of the heating plant.

Installations made so far include those in laundries, in lumber and woodworking plants, in hospitals and in various type manufacturing establishments. In most of these installations, the heating plant is hand-fired, but over-fire air also works in some stoker-fired plants. Mr. Douglass said his plan was to look for smoking smokestacks and that each one pointed the way to a prospect.

The size of the fan and motor used varies according to the amount of air to be furnished on the job. Installations have been made so far mostly in boilers of 100 hp or more. In one installation in a 150 hp boiler, the fan had a capacity of 400 CFM at 10 inch static pressure. A 2 hp motor was used to pull the fan. The fans are equipped with dampers, so that the volume of air may be controlled, and are usually set to get the highest percentage of CO_2 gas emergence from the stack without smoke. Installations are made pretty well in accord with the report on "Application of Overfire Jets," by Richard Engdahl, as published by Bituminous Coal Research, Inc., of Washington, D. C.

The over-fire air apparatus is not operated full time, but only as needed, and especially after firing the furnace. On some of the installations automatic controls are provided, so that the equipment cuts on when the fire door is opened and is closed down by a time relay in three minutes. This time is ample to allow for complete combustion of the excessive volatiles released from the charge of green fuel fired. In most installations, the equipment is operated by a switch, convenient to the fireman. In one plant, Mr. Douglass erected a mirror so the fireman could see the smokestack without going on the outside. He added that a

E. T. Douglas, Jr., of Douglas-Murray Co., Birmingham, is shown here holding one of the manifold nozzles developed for use with a blower to provide air over boiler fire in order to reduce smoke.



The PRODUCT WITH A PEDIGREE
THE P. D. GEORGE CO.

PEDIGREE
INSULATING VARNISHES

Laboratory-tested . . . proven in service . . . first choice of the entire industry. Pedigree Varnishes are designed to do the job better . . . backed by a quarter-century of experience.

Distributed by
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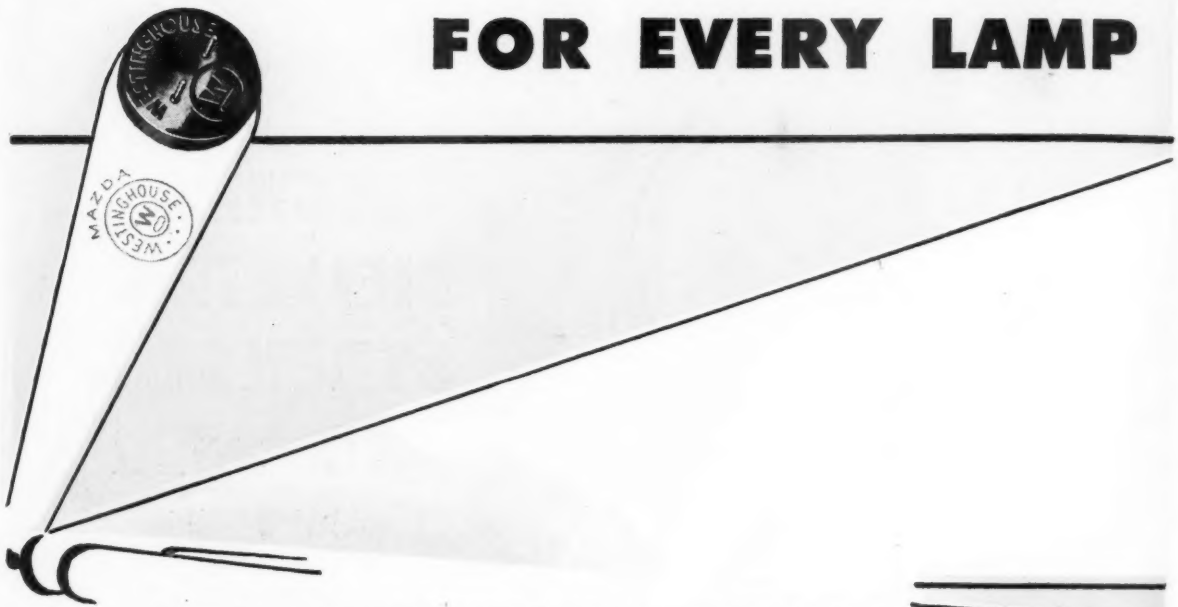
INSULATION & WIRES INCORPORATED
TRI-STATE SUPPLY CORPORATION

Manufactured by
THE P. D. GEORGE COMPANY, ST. LOUIS, U. S. A.

A LONG, BRIGHT FUTURE FOR EVERY LAMP



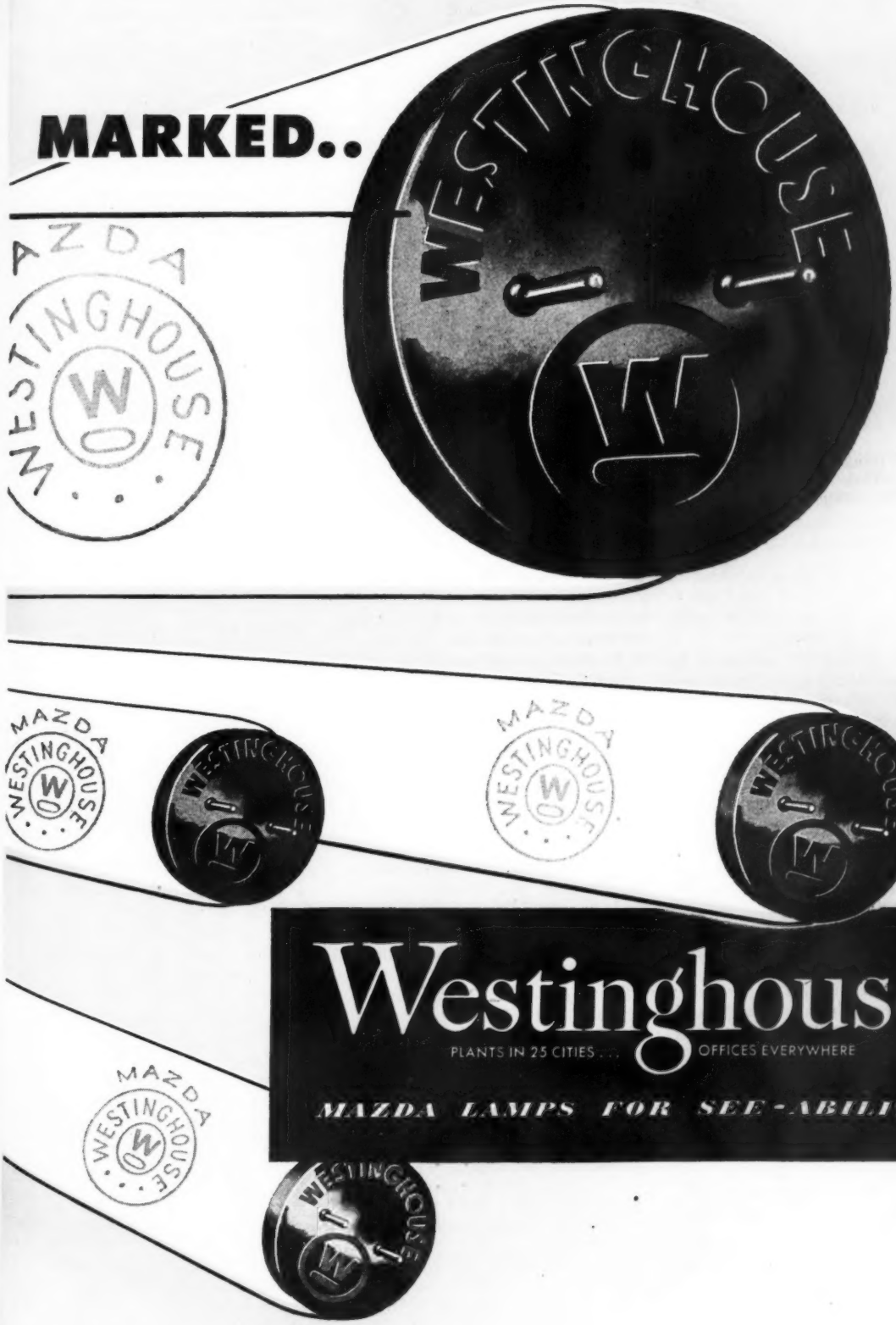
Every Westinghouse Fluorescent Lamp is a triumph of tireless research, skilled engineering and manufacturing know-how. Long life, unvarying efficiency and end-to-end brightness are literally built into every lamp carrying the famous Westinghouse trade mark.

Rigid control of raw products guarantees the utmost in quality material used. An example of this meticulous care can be demonstrated by the system of acid-washing, mixing and blending by which the phosphor powder is purified. Foreign matter is removed to a degree that not one part in a million remains to affect the light output.

This is matched by a precision of assembly technique which assures the uniformity of every Fluorescent Lamp Westinghouse makes. For instance, standards are so exact that no lamp varies more than 47/1000ths of an inch in length.

"Quality Control" means a long and useful life for every Westinghouse Fluorescent Lamp. And naturally means that you can recommend with complete confidence every lamp marked "Westinghouse." Westinghouse Electric & Manufacturing Co., Bloomfield, N. J.

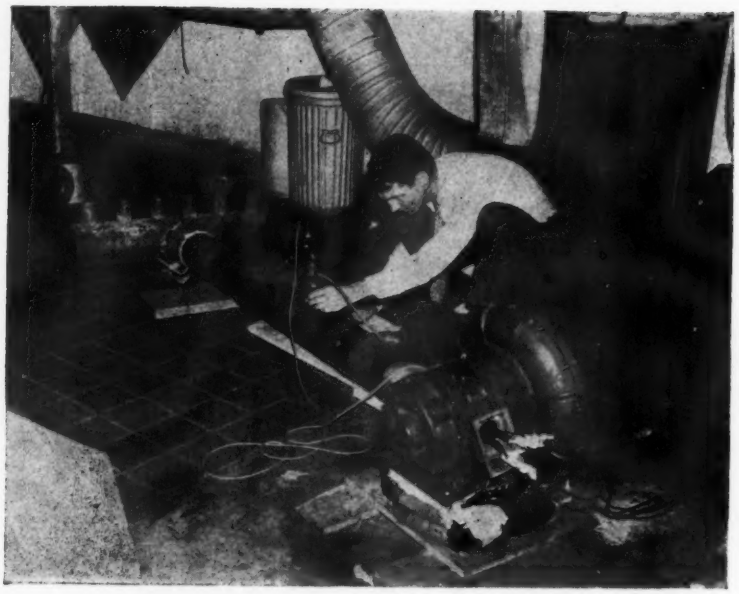
MARKED..



Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

MAZDA LAMPS FOR SEE-ABILITY



Here, Mr. Douglas is testing out a laboratory model of the type equipment he is installing in boilers to introduce over-fire air and thus eliminate smoke. The company sells a wide range of heating, air-conditioning and ventilating equipment.

photo electric cell can be mounted in the smokestack, so as to ring a bell or flash a signal light in case the smoke reaches a certain density.

Overfire air can be introduced by high-pressure steam as well as by fans, but on the basis of operating costs the fans are cheaper. In one installation made by this concern, steam jets were replaced by the over-fire air from fans and at a saving in fuel to the customer. However, Mr. Douglass added steam jets might be justified in some cases where fans cannot be obtained, are excessive in cost, or where turbulence only is needed and additional air would be detrimental to furnace performance.

So far this concern has made installations in plants burning shavings, sawdust and mill refuse as fuel as well as coal. The equipment worked equally as well. One installation was made in an apartment house which has a downdraft boiler. One was made for a restaurant with a 30 hp stoker-fired boiler.

The city smoke inspector has organized parties of engineers, firemen, building superintendents and real estate men to visit plants where the smoke eliminating equipment has been installed. It is hoped by a program of education to induce other concerns to install similar equipment, to the end that the city may be made smoke free. Birmingham is in the center of a soft coal producing district and it is not desired by the city to prescribe smokeless fuel. However, the smoke inspector is convinced that 98 per cent of the smoke can be eliminated by the use of the right kind of equipment.

Installations are usually made on week-ends when the plants are down and are personally supervised by Mr. Douglass. He said the equipment could be installed in the average plant within a day. Biggest job is cutting into the bridge wall and building the foundation for the steel manifold and nozzles. Installations have been made so far only in industrial and commercial establishments, but Mr. Douglass expects to extend them after the war to domestic heating plants as well.

The Douglass-Murray Company was established more than 10 years ago to sell coal and coke, but has gradually expanded to take on heating and ventilating equipment including stokers, ventilating fans, air conditioners, and now the over-fire air apparatus.

Publics' Kitchen Needs Indicated by Survey

RESULTS of a study of consumer wants, having special interest to dealers serving "better than average" clientele, indicating new profit opportunities in steel cabinets and electric sinks, has been released by Edison General Electric Appliance Company, Chicago, Ill.

First tabulations of preferences in kitchen equipment expressed on applications for "personalized" kitchens plans, the $3.00 service offered with Hotpoint's "Your Next Kitchen" booklet, show that 80 per cent of those planning to build will want an electric range, 71 per cent a new electric refrigerator, 69 per cent an electric dishwasher, 58 per cent a garbage disposall and 82 per cent steel cabinets. Of those who will remodel, 48 per cent ask that an electric range be put into the plan, 52 per cent say they will want a new refrigerator, 67 per cent want dishwashers, while 51 per cent say that their sink will enclose a garbage disposall, and steel cabinets are asked for in the plans of 81 per cent.

The booklet enclosing the plan application also offers standard floor plans at no cost. Of the 700,000 copies of the planning guide distributed to date, an apparent 40 per cent are asking for one of the six plans of which a choice is offered. The personalized plan, suggested only when none of the prepared designs is suitable, has attracted approximately 500 requests.

In announcing the tabulations from these returns, Ward R. Schafer, general sales manager for the makers of Hotpoint appliances said, "The needs of families requesting the personalized plans are probably above the average for all who plan to build. The average price of the homes they will build is between $8,000 and $10,000. Because that market is especially attracted to electric sinks with dishwashers and garbage disposalls, dealers serving areas of better than average communities will find these prospects "pre-sold." Schafer indicated that Hotpoint dealers are supplied photostatic copies of the personalized plans sent into their districts.

He said that designing a kitchen from bare room dimensions without other information, was not possible, with the result that applicants for those kitchens were asked to answer twenty-six questions amplifying their living needs. The queries included: New home or remodeling? If remodeling will it be entire home, or just kitchen? Do you have maid service? (Of those answering, 47 per cent said yes.) Do you entertain extensively? moderately? Do you want, breakfast room? separate nook?

The questions brought out a clear picture of the requirements of the families giving the answers. Schafer noted that a surprisingly clear picture of the living needs of homes in the $10,000 class could be gained from the study.

FOR SAFETY'S SAKE . . . USE CONDUIT *(Full Weight Rigid Steel)*

- Makeshift Wiring Methods are "OUT" for Reconversion

BACK in the days when America was producing "too little and too late," the electrical industry had to accept certain less-than-excellent practices for wiring buildings. Codes that have insured safety under all conditions had to be suspended in the face of dire emergency. But, of course, plants with this emergency type of wiring were designed to operate that way only a few years at most.

Today, America is thinking about converting these plants to permanent peacetime use. So it is extremely important that all temporary wiring systems be converted, too--through replacement with permanent, full-weight, standard-threaded, rigid steel conduit systems.

Buckeye conduit, known everywhere for its high excellence and uniform quality, gives maximum protection against tampering, crushing, dust, dirt, moisture, vapors, vibration, explosions. It is available now through your distributor.

For your new peacetime jobs, as well as for reconversion jobs, you can now throw out makeshift wartime practices and specify and use BUCKEYE conduit, to insure permanent wiring protection of which you can always be proud.

QUALITY V YOUNGSTOWN SERVICE

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Ask your distributor for: Youngstown Buckeye Conduit, Pipe and Tubular Products, Sheets, Plates, Electrolytic Tin Plate, Coke Tin Plate, Bars, Rods, Wire, Nails, Tie Plates and Spikes.

Profitable Contracts Wiring Automatic Alarm Systems

SEVERAL bad fires which endangered human life in government dormitory buildings in the Mobile, Ala., critical war production area, has led to several profitable wiring contracts for installation of automatic fire alarm systems.

The Union Electric Company, of Mobile, a comparatively new contracting and engineering firm, has just completed a $13,000 contract for wiring 15 of the wooden dormitory buildings in which war workers and their families live.

The system selected by the Union Electric Company (the contract offered the choice of two) was one using inexpensive thermostat spot detectors wired to an alarm system consisting of bells.

Variations of this system should be a profitable and easily sold job for all contractors during the remainder of the war and after the war because it would be a "natural" as an adjunct to sprinkler systems in permanent buildings; for giving protection to an isolated corner in a warehouse and for general protection by alarm. Such an alarm wired in wooden and nonfireproof small hotels would almost insure no loss of life in case of fire. Aggressive contractors will find many good prospects for such jobs when men and materials are more readily available.

Offered their choice of two systems, one using thermoplastic cable which fuses when temperature rises to dangerous limits and sets off the alarm, and a system using spot detectors, consisting of small sealed thermostats with a normally open circuit which fuses when its rated operating temperature has been exceeded, the Union Electric Company chose the latter system.

This system was simple and the materials were obtainable. In addition, when a thermostat sets off the alarm, if not burned by fire, the unit returns to normal working condition. All that would be required would be replacing a thermostat. With thermoplastic cable systems, all of the cable that has fused, since the melting of the plastic insulation sets off the alarm, has to be taken out and renewed to restore the system to working condition. The thermoplastic system probably offers a little more work for electrical contractors, but in case of fire, when a section has to be rebuilt and rewired, the conditions are about equal.

Contractors may expect opportunities after the war to use all kinds of alarm systems, such as the one described here, and more elaborate devices such as the electric eye.

The Union Electric job required the use of 30,500 feet of twisted telephone wire, which operated from a transformer bank and an auxiliary dry battery bank; 2,000 thermostats; 128 break-glass stations; and 110 6-volt bells.

Current supply was the regular 110-volt house current which fed a 50-watt transformer, with a six-volt secondary winding. The twisted pair of telephone cable was stapled and most of it was concealed in the attic. The spot detector was a thermostat, type B-1 with an ordinary rating of 155 degrees. Detectors placed in the boiler room were rated at 185 degrees due to the higher room temperature. Some of the detectors were wired into the attic near the roof. Connections to the transformers were with bx cable, this material being allowed on the contract.

Each building was wired independently, and the system does nothing but ring the bells to summon the watchman and alarm the occupants at the first sign of fire. The system was wired into a central control panel in each building, where push buttons were provided for testing the alarm system. A switch provided testing with battery current and with the alternating house current and the watchman in

Union Electric Company, of Mobile, Alabama, has found installation contracts for fire alarm systems particularly profitable. Above is exterior of new building recently occupied by this contracting and engineering company. At left, H. R. Bryars, construction superintendent, for the company. At top, crew and truck at wiring job.

The Way Back...

Though a desperate enemy may force temporary reverses, the allied forces are over the hump.

The end may be still some way off, but the knockout is inevitable.

We are on our way back . . . not to the old way of life . . . but to a better way.

You can look ahead and see what's in prospect for at least several years. America's replacement needs reach proportions that almost stagger the imagination.

You can plan ahead with assurance that your entire financing program . . . whether wholesale, retail or to meet special situations . . . can be well taken care of through Commercial Credit service.

COMMERCIAL CREDIT COMPANY

BALTIMORE 2, MARYLAND

Capital and Surplus more than $65,000,000

Credit Bankers to America's Families for 33 Years

Installing a "glass break" box in one of the halls of the dormitories. Thermostat is on ceiling.

each building was instructed when to make the tests. Five No. 6 dry cells were used in each system, giving a total of seven volts, for use as a standby.

The dormitories have an electrical maintenance man for several buildings who will have charge of testing the system and replacing the dry cell batteries at proper intervals.

The bell used was an ordinary a-c d-c 6-volt vibrating type bell.

The buildings and the contract were under the jurisdiction of the War Housing Administration. Listed below are some of the rules provided by them in the contract:

1. Circuit wiring shall be concealed where practical, length not to exceed 1000 feet without branches or alternative paths.

2. Where necessary, system must be protected against mechanical injury.

3. Thermostats shall be so disposed throughout the area to be protected that they will not be more than 30 feet apart and 15 feet from side and end walls, but in no case to protect more area than that for which they are approved.

4. Each enclosed space or separate room shall be provided with at least one thermostat.

5. The thermostats may be mounted on ceilings or on sidewalls not more than 20 inches below the ceiling.

6. Thermostats of ordinary rating (155° F.) shall be installed for ceiling temperatures not exceeding 100° F.

Thermostats of intermediate rating (212° F.) shall be installed for ceiling temperatures exceeding 100° F. but not for 150° F.

Thermostats of hard rating (286° F.) shall be installed for ceiling temperatures exceeding 150° F. but not for 225° F.

Thermostats of extra hard rating (360° F.) shall be installed for ceiling temperatures exceeding 225° F. but not 300° F.

The Union Electric Company moved into their new building at 706-08 S. Washington Avenue, in October, 1944.

J. T. Lott is president and general manager and J. B. Lee is a member of the firm and shop superintendent. H. R. Bryars is construction superintendent.

Many Uses for Lacquer Thinner Reported by Motor Shop

THE MOTOR repair shop can find many uses for the thinner used with synthetic lacquers, reports H. E. Grant, of Tennessee Electric Motor Service, Nashville, in a recent issue of the news letter of the National Industrial Service Association, electric motor repair shop organization. Although designed to thin the lacquer for use in spray guns, this is only one of its many possible uses. The lacquer thinner has the property of attacking, softening and removing practically all types of paint, baking varnish, grease, etc., and as it evaporates very quickly, it does its work without damage.

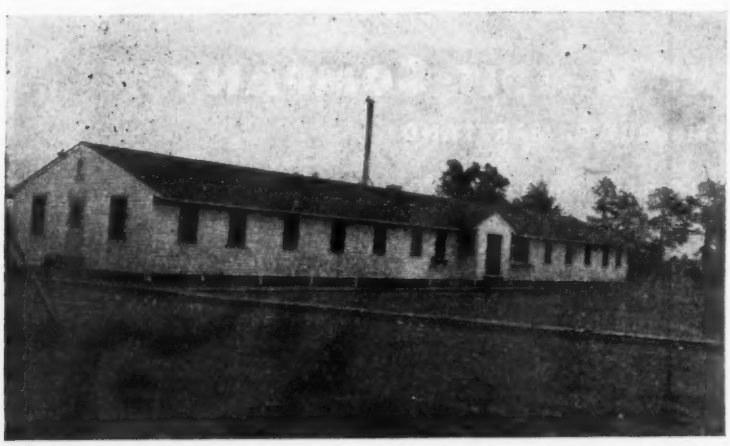
One of its handiest uses around a small motor shop is in freeing up governor weights that may have gotten baking varnish in their mechanism while being dipped. We all know that if this happens after the jobs come out of the oven the governor weights are stiff and gummy. By applying a small amount of thinner to the weights and working them back and forth and blowing them with compressed air to remove the softened varnish, the weights are instantly freed up.

Another very handy use is when baking varnish gets into the tapped screw holes in a stator frame and is baked hard. We all know that when this happens, before the job can be assembled that this varnish has to be cleaned out of the hole and the threads before the screws will go in. Pour a little thinner into the hole and let it stand a moment or so and then run in a tap or the screw, remove it and blow out the hole. The varnish is gone.

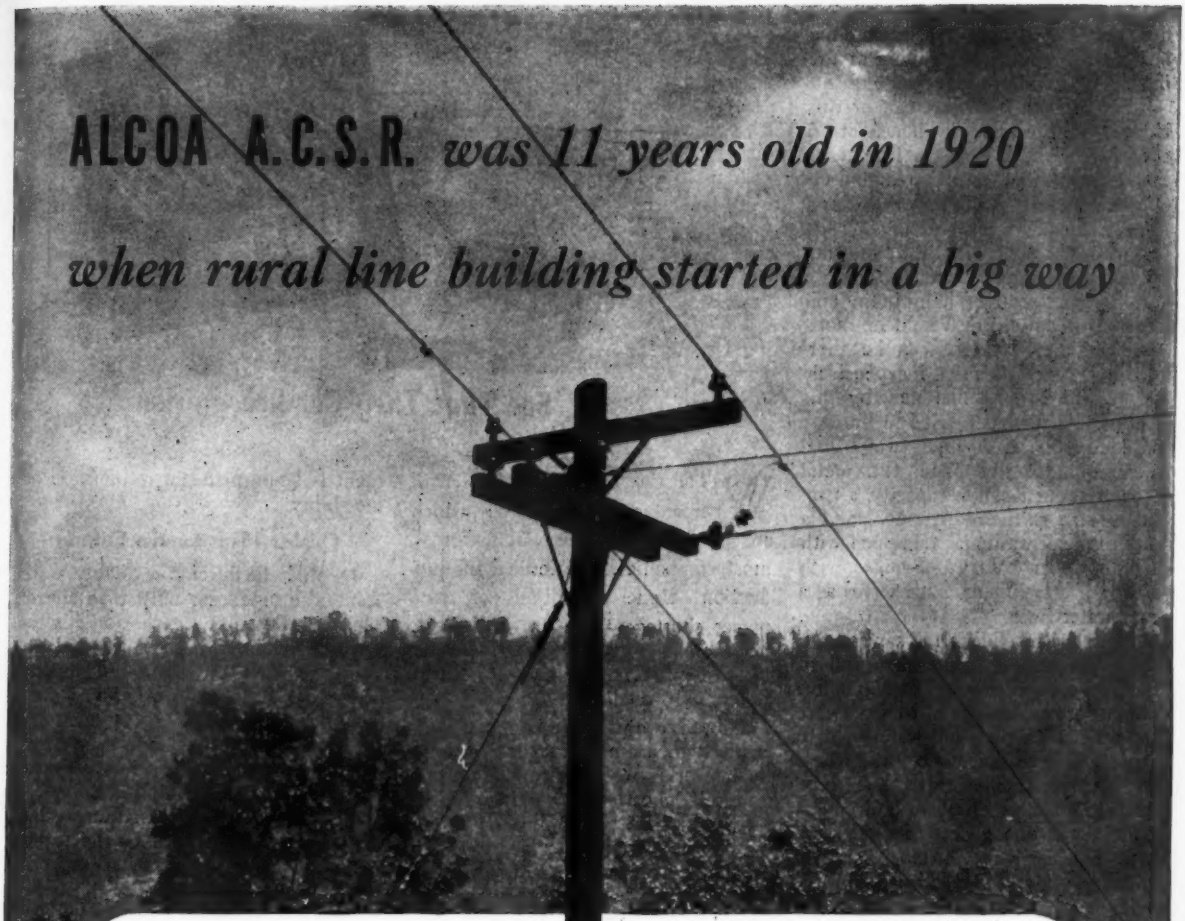
If varnish gets on the shafts of armatures, apply a little thinner before polishing the shaft off. The varnish will come off much easier. Likewise, it will remove the varnish from nameplates, etc., very readily.

After soldering connections to bakelite switches, brush the bakelite plate with thinner, using a small, stiff-bristled paint brush to remove the surplus soldering flux because if this flux is left on, it very frequently will cause the bakelite to break down.

If, after installing a bearing, you find it to be a "little tight" and you want to "break it in," apply a little thinner instead of running it dry, and you will



One of sixteen dormitories equipped with automatic fire alarm systems by Union Electric Co., of Mobile. Buildings are of wood and listed as temporary war emergency buildings. The alarm is designed to give the families occupying these buildings a chance to escape in case of fire.



ALCOA A.C.S.R. *was 11 years old in 1920*

when rural line building started in a big way

After World War I, the utilities started extending their services into farm areas to expand their markets. Logically, they built with Alcoa A.C.S.R. conductors.

The properties that led to the wide adoption of No. 4 and No. 2 A.C.S.R. for rural lines are these: Conductors have high strength, permitting long spans with safety. Their conductivity is sufficient to allow for future growth of electrical loads, thereby enabling these lines to pay out. Aluminum's ability to resist corrosive attack assures long life. Construction with Aluminum Cable Steel Reinforced is economical.

That all of these advantages are very *real* is evidenced by the superb performance of over a million miles of Alcoa A.C.S.R. on hi-lines and rural lines. Users are asking for more. ALUMINUM COMPANY OF AMERICA, 2164 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA A-C-S-R

ALUMINUM CABLE STEEL REINFORCED

find that it will help in breaking the bearing in, prevent any galling of the bearing and will produce a smooth fit.

Keep a small oil squirt can of this thinner on the assembly bench at all times. The above is just a few of its many handy and time-saving uses. There are dozens more as you will find after trying it.

Mr. Grant advises that the following is an effective and inexpensive cleaner for all brass, copper, aluminum and other small parts. Brush holders, short-circuiting devices, etc., can be thoroughly, quickly and inexpensively cleaned to be just like new by this method. All that is needed in the way of equipment is a small two-burner, preferably gas, hot plate, two metal cans of about 5-gallon capacity, a two-gallon size earthenware crock, and a sink or small washrack, equipped with a drain and a cold water faucet with a shower attachment. This serves as a cold water rinse.

Place the two five-gallon cans on the hot plate and fill about 2/3 full of water. To one of them add about five pounds of caustic soda or oakite. Leave the other with the plain water in it to serve as a hot water rinse. Bring these to a temperature of about 180° Fahrenheit. (Not necessary to boil.) Next pour about one gallon of nitric acid into the earthenware crock and to this add about ½ gallon of sulphuric acid.

Instructions for the use of this cleaner are as follows:

1. String parts to be cleaned on wire and place in caustic for several minutes, except aluminum. Only leave aluminum parts in caustic for a very short time as caustic will deteriorate aluminum very rapidly.

2. Remove parts from caustic and rinse in cold water.

3. Rinse parts in hot water and let drain.

4. Dip parts in acid, remove and place under cold water rinse.

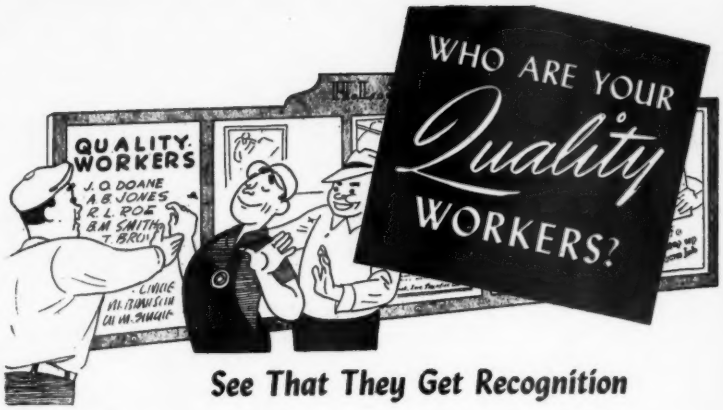
5. Rinse thoroughly in cold water shower and then give them a second rinse in hot water. The hot water will leave the parts warm and this will cause them to dry very quickly.

6. Blow off and thoroughly dry parts with compressed air.

7. When the caustic solution becomes weak, add about a double handful to the solution.

It is suggested, if possible, that this cleaner be located in a small room to itself or in a corner of the shop as far away from the machinery as possible as the fumes from the acid are very objectionable. Also, if too close

(*Continued on page 75*)



See That They Get Recognition

WITH the exception of a small percentage of companies which are still expanding their working forces, most companies have leveled off production. Under conditions of manpower shortage there has not always been an opportunity to choose between quality workers and workers indifferent to quality.

Now, however, supervisors in companies which are no longer expanding their working forces should start to carefully check the workmanship of each employee. This checkup should be continuous and specific. It should include making a record of specific examples of poor workmanship and high quality workmanship. This will give a supervisor some factual basis upon which to determine which workers should be retained if there is any occasion to reduce the working force.

Proper recognition of quality workmanship is an incentive to those with any sense of pride in the work they do. Sometimes it merely requires a word of praise to cause a man to feel highly rewarded for the good work he does. In fact it may not always be possible to fully reward the quality worker in actual dollars and cents. It costs nothing to give credit where credit is due.

On the other hand, there are tangible ways to give recognition for good workmanship. When considering individual wage increases, merit increases, promotions, favorable transfers, or layoffs, the quality of a man's workmanship should be given full weight.

It helps to give the quality worker public recognition through your words of praise in the presence of others. Or, bulletin board notices of quality records may satisfy the desire of most persons to have their good work recognized. When assigning jobs calling for the highest quality skill, make it known to the worker chosen that the assignment is being made in recognition of his ability.

Quality Plans for the Future

In order to develop a quality work force, the supervisor must plan ahead. He must determine each worker's capacity for developing quality skill. In order to have an all-around quality work force tomorrow, you must start planning for it today.

This planning includes careful selection of men for assignment to quality jobs. It requires full and complete quality instructions. It requires that workers be informed as to the future that lies ahead of them if they do quality work.

Every company recognizes today that we are about to enter into a period of keen competition. As we increase the amount of civilian output following victory, our products will come into keen competition with products of other companies.

Cost and quality of products are going to be two principle factors in meeting competition. People have become pretty well "fed up" with poor quality products. They are losing patience with many of the excuses that are given in explanation of poor quality products. More and more people are getting into the mood to be very exacting about quality as soon as products come back to the market.

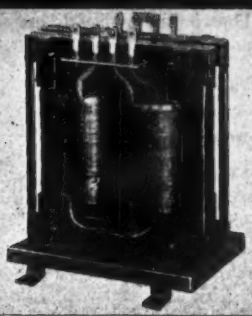
If every department in your company is given the same kind of quality supervision you give your department, how well do you think your company will be able to compete? Will the output from your department meet the quality requirements that the new competition will bring?

It is not a minute too soon for you to start thinking seriously about getting your work force set for quality competition.

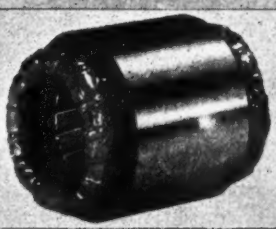
(*Management information prepared by the Elliott Service Co., N. Y. C.*)

PG-4 PX-5 223

Synthite*



PG-4 A Clear Baking Varnish with excellent oil resistance. Thermosetting and possessing a high dielectric strength, this varnish can be thinned with VM&P Naphtha (Benzine) and does not require any special solvent.



PX-5 A Black Baking Varnish adaptable to all types of electrical units, suitable for Formvar, Formex and glass coated wire. Degree of hardness can be regulated by the baking time.

223 A Clear Baking Varnish which provides exceptional bonding properties and heat resistance, making it ideally suited for high speed windings. The hardness of this material permits ease in machining.

Synthite* . . . a trade name that is gaining more and more recognition throughout the electrical industry, can be furnished in both air drying and baking type varnishes, all formulated to give you more uniform and efficient production. These polymerizing types of varnishes provide a heavier build-up than most conventional grades, affording a high degree of resistance to oil, water, acids and alkalies. There is a grade of DOLPH'S SYNTHITE that will do a better insulating job for you.

Write us today for further information and let our Laboratory and Service Engineers assist you in your insulating varnish problems, without any obligation on your part.

* REG. U. S. PAT. OFF.

Insulating Dolph's *Varnish Specialists*

JOHN C. DOLPH COMPANY

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How to change America's biggest industry

America's biggest industry awaits electrification after the war.

That industry employs more people than any other—at least one member of every family.

That industry spends more money than any other—approximately 30 billion dollars a year.

That industry is *housekeeping.*

Your opportunity

Taking care of the home is still pretty much in the handicraft stage. There are, of course, many wonderful electrical appliances to save the housewife steps, time, and money. But only a small fraction of American homes employ these appliances to their fullest extent.

The job—for utility companies as well as appliance manufacturers—*is to tell the housewife how she can do her work, quicker, better, and easier by electricity.*

How many women in the communities you serve are convinced

- that an electric range cooks cleanly, coolly, and completely unattended?
- that a flatplate ironer can do in three hours the work that now takes her six? And that the operator can sit down and remain cool while she's working?

into Kilowatt Hours

• that a washing machine has the strength of 13 women? That it can eliminate blue Monday forever at an operating cost of one dollar a year?

Facts like these are the dynamite that will blast the old-fashioned conception of "woman's work is never done" from the American scene. Facts like these will build a power outlet to replace war industries.

The job to be done

Utility companies . . . both those who sell at retail and those who promote through retailers . . . will want to step up their educational campaigns.

General Electric . . . through its Consumers Institute . . . through its Home Bureau . . . through nationwide publication advertising . . . through one of the largest daytime radio programs on the air . . . and through other educational efforts, has been pushing these ideas.

During 1945, General Electric appliance advertising . . . with a total of 665,391,793 impressions in consumer magazines . . . will carry forward this campaign.

Our radio program "The G-E House Party" will have a potential audience of 28,000,000 radio homes.

Your co-operation* with us in this program of education for electrical living will go a long way toward making the American Home of tomorrow an all-electric home. General Electric Co., Appliance and Merchandise Department, Bridgeport, Conn.

For Victory—General Electric is working night and day to back the attack. You can help, too, by buying and holding more war bonds than before.

*Public utilities can cooperate today by sending to their customers announcement materials featuring "The G-E House Party", which are available free of charge.

Tune in: *"The G-E House Party," every afternoon, Monday through Friday, 4 p. m., E.W.T., CBS.*
"The G-E All-Girl Orchestra," Sunday, 10 p. m., E.W.T., NBC.
"The World Today" news, every weekday, 6:45 p. m., E.W.T., CBS.

Application of Capacitors To Induction Motors

By W. C. Bloomquist and W. B. Boice*

POWER FACTOR improvement of induction motor loads by means of shunt capacitors has been a common practice for many years. Recently, the practice of connecting the capacitors directly at the motor terminals has developed, in order to permit switching of the capacitors and motor as a unit. This will not result in adverse motor operation if the amount of capacitors is properly selected. There is very little written material regarding operating experience although capacitor and motor manufacturers have accumulated some experience.

Experience has shown that frequently too large a capacitor rating was used resulting in overvoltage due to self-excitation when the motor starter was opened; in some cases the voltage rose to 200 per cent causing failure of motor insulation, indicating lamps, and other devices. In several cases, the motor coupling and shaft were damaged when too large a capacitor bank was used and the motor switched by a reduced-voltage auto-transformer type starter. In some cases, motors have been damaged from overload because allowance was not made in the overload setting for the reduction in line current due to the capacitors. In other cases, instruments and meters connected in the current transformer secondary circuit have been damaged as a result of overvoltage.

Self-excitation refers to the action of an induction motor operating as an induction generator with excitation supplied by capacitors, such as may occur when the switch is opened and the running motor is disconnected from the power source or when the motor is driven by an external means. If resistance is neglected, self-excitation will occur when capacitive reactance, Xc, is equal to or less than the magnetizing reactance, X_L.

(A small value of Xc corresponds to a large capacitor kva rating.) For practical purposes Xc = X_L when the capacitor kva rating is equal to the magnetizing kva of the motor. This is very nearly the reactive kva or kilovars at no load.

Curve M of Figure 1 shows a typical volt-ampere characteristic of a motor. Point A indicates the per cent magnetizing current at no load and normal voltage. Curves C_1, C_2, C_3, and C_4 show the volt-ampere characteristics of capacitors of various ratings. All capacitor curves falling below the motor characteristic curve M indicate that Xc is less than X_L (capacitor kva is larger than the motor magnetizing kva) and therefore the motor will self excite. The final voltage of self-excitation, assuming the speed remains constant, occurs when Xc is equal to X_L or at the points of intersection of the capacitor curve with the motor characteristic curve (points B, C and D). Capacitor curves above the motor curve, such as curve C_4, indicate that the capacitor kva is less than the motor magnetizing requirements, and the motor will not self-excite. Self-excitation can be checked readily by connecting a voltmeter across the motor terminals and reading the voltage after the switch is opened.

Curve C_2 of Figure 1 is for the case where the capacitor kva is sufficient to improve the motor full load power factor to 100 per cent. Note that the voltage of self-excitation is 143 per cent; this will vary among motors and may be considerably higher for some motors.

In the usual motor application, the motor slows down rapidly after the switch is opened, and the voltage rapid-

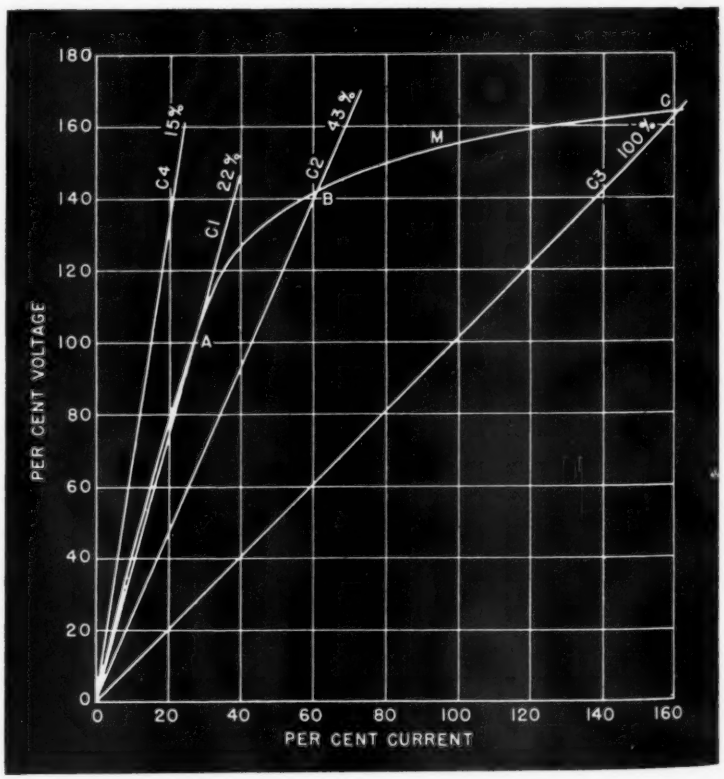

Fig. 1. Motor excitation curve and volt-ampere characteristic curves for capacitors of various ratings.

*Both of General Electric Co., Schenectady, N. Y. This article is adapted from a paper presented at the AIEE Winter Technical Meeting, New York, in January, 1945.

When Laytex-insulated wire first reached New Guinea, the natives were puzzled about its purpose. So were the inhabitants of other lands—from the Solomons to Mongolia.

For Laytex has gone into many, many regions where no wire had ever gone before. Under arctic cold, steaming tropic heat, the shattering shock of heavy explosions, Laytex performs better than was ever expected of any wire.

The entire output of Laytex Wires and Cables goes to fill the needs of war. But in a not-too-distant future the advantages of Laytex will be available for a long list of important home services... Buildings, Police and Fire Alarms, Communications, Signalling, Power, Control, and many more.

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ly decreases—a 15 to 20 per cent reduction in speed eliminates self-excitation so the voltage collapses in a few seconds. However, in a few cases with high inertia loads the voltage of self-excitation has been sustained for several minutes.

The graphical solution described above assumes that the frequency of self-excitation is equal to the power system frequency. This is approximately true in most cases since the frequency of self-excitation corresponds to the motor speed which is very nearly synchronous speed.

Overvoltage may be reduced by means of a series or shunt resistance in the capacitor circuit, but generally such devices are not used because of the continuous losses or the complication of switching the resistor to avoid the losses.

Overvoltage alone may not be the sole criterion for selecting the amount of capacitors to use; the listings of Table I consider both transient torque and voltage.

When a running induction motor with shunt capacitors is connected to a power source, a high transient torque may be developed. This may occur when a motor is transferred to the line from the reduced-voltage tap of an auto-transformer type starter, Figure 2. This may also occur when a running motor is temporarily disconnected from its line, and the switch (Figure 4) is reclosed while the motor is still running, and maintaining voltage at its terminals by self-excitation.

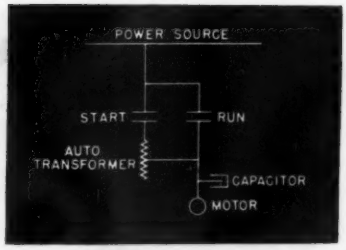


Fig. 2 Diagram of reduced-voltage auto-transformer type motor starter with capacitor at motor.

In order for transient electrical torques to appear, the motor voltage developed by self-excitation must be of appreciable magnitude, and it must be out of phase with the line voltage when the switch is closed. The torque is similar to that caused by connecting together two synchronous generators which are out of phase.

If there is no load connected to the motor shaft, the torque will be absorbed by the motor inertia and will merely result in a momentary acceleration of the motor, lasting for a few cycles.

If the inertia of the load connected to the shaft is appreciable, some of the torque will be transmitted by the shaft to cause acceleration or deceleration of the load. If the load inertia is several times the inertia of the motor rotor, most of the transient electrical torque will be transmitted as transient mechanical torque by the shaft and coupling. In some cases, this has caused fracture of couplings and twisting of shafts.

The peak value of the electrical torque is determined primarily by the magnitudes of the line and motor voltage, the electrical angle between them, and the reactance and resistance of the motor. High transient torques are accompanied by high transient line currents. The transient torque is of an oscillating character, lasting only for a few cycles, and usually having its maximum value in a decelerating direction. The values of peak torque obtainable for a typical motor are shown by Figure 3.

In order to prevent transient mechanical torques from damaging the shaft and coupling, the peak mechanical torque should not be permitted to exceed about 6 times normal. In general, if the connected capacitor kva does not exceed the value given by Table I, excessive torques will not result from switching occassioned by the use of electrically-operated reduced-voltage starters. This is true because the switching time is so short that a high motor voltage and electrical angular difference does not appear.

If manual switching is employed,

TABLE I—Recommended Maximum Capacitor Rating When Capacitor and Motor Are Switched as a Unit*

Induction Motor Horsepower Rating	Motor Speed in RPM											
	3600		1800		1200		900		720		600	
	CKVA‡	%AR†	CKVA	%AR	CKVA	%AR	CKVA	%AR	CKVA	%AR	CKVA	%AR
10	2.5	9%	4	11%	4	12%	5	17%	5	23%	7.5	28%
15	2.5	9	5	11	5	11	7.5	16	7.5	21	10	26
20	5	9	5	10	5	11	7.5	15	10	20	12.5	24
25	5	9	7.5	10	7.5	10	10	14	10	19	15	22
30	7.5	9	10	9	10	10	10	13	12.5	18	15	21
40	10	9	10	9	10	10	12.5	12	15	16	17.5	19
50	12.5	9	12.5	9	12.5	9	15	12	20	15	22.5	17
60	15	9	15	8	15	9	17.5	11	22.5	14	25	16
75	17.5	9	17.5	8	17.5	8	20	11	27.5	13	30	15
100	22.5	9	22.5	8	22.5	8	25	10	35	12	37.5	14
125	25	9	27.5	8	27.5	8	30	9	40	11	47.5	13
150	32.5	9	35	8	35	8	37.5	9	47.5	11	55	13
200	42.5	9	42.5	8	42.5	8	45	9	60	10	67.5	12

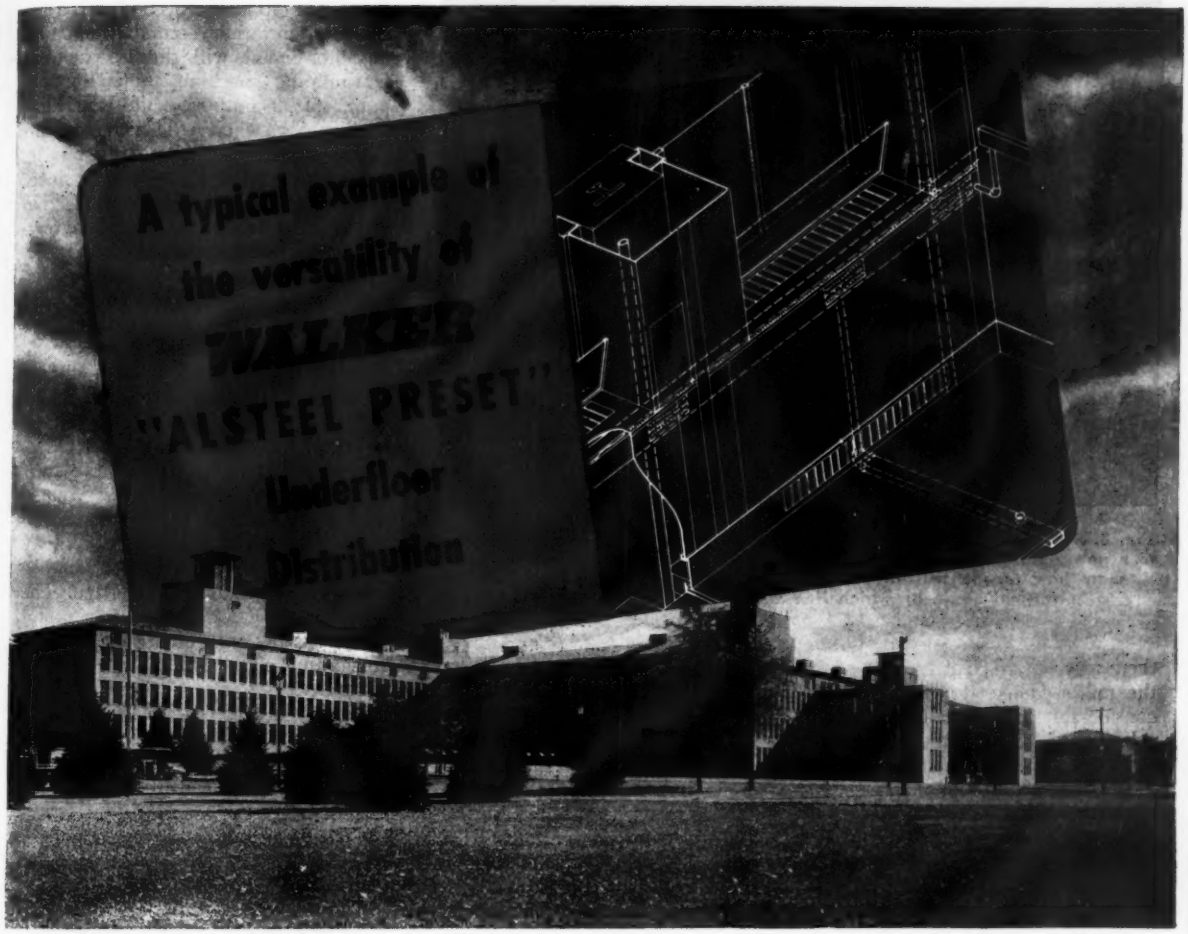
***This is representative data for 3 phase 60 cycle general purpose open type induction motors of 220, 440, 550, and 2300 volt rating.**

When manual reduced voltage auto-transformer type starter such as shown in Figure 2 is used, refer to method described in the text for selecting the capacitor rating.

The motor full load power factor, with capacitor ratings as listed in this table, will range from 95 to 98 per cent.

‡CKVA is rated kva of capacitors connected at motor terminals.

†%AR is per cent reduction in line current due to capacitors and is helpful for selecting the proper motor overload setting when the overload relay is located as shown in Figure 5.



• Bell Laboratories at Murray Hill, N. J., the building that was designed and built to last for 99 years.

Architects and Engineers
VOORHEES, WALKER, FOLEY & SMITH, New York City
Electrical Contractors
HATZEL & BUEHLER, INC., New York City
Underfloor Distribution System and
"Dualcote" Rigid Steel Conduit distributed through
GRAYBAR ELECTRIC CO., INC., New York City

• Above drawing shows the three-fold system of electrical wiring distribution, described in text at left.

In the Bell Laboratories' building at Murray Hill, N. J., a unique system of electric wire distribution was devised, requiring a hook-up of three different types of conduits. See drawing at right.

The Walker "Alsteel Preset" System was used for underfloor distribution. Ducts were provided at six-foot intervals, with terminal outlets inside the wall. Walker "Dualcote" Rigid Steel Conduit carried the cables to a specially designed trough which extends along the wall. The lower channel of this trough carries the high tension wires for laboratory use; while the top of the raceway carries the telephone wires. Openings at the center of each window sill provide connections with each series of wires.

This is but one of many important buildings where the Walker "Alsteel Preset" Underfloor Distribution System has been specified. It is designed to meet all present and future "change-over" and rearrangement needs encountered in distribution of light, power, telephone and signal wires. It is adaptable for flooring of all commonly used materials. And it is economical.

Ask your distributor about prices and deliveries. For further particulars, write to WALKER BROS., Conshohocken, Pa.

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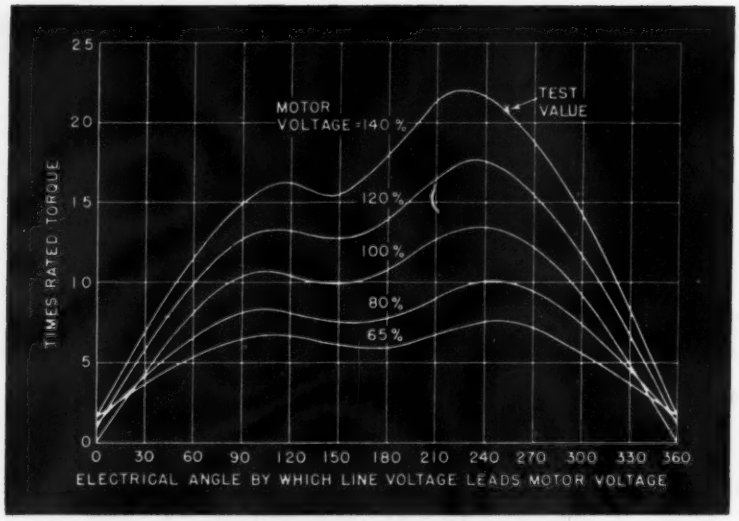


Fig. 3. When a running induction motor with shunt capacitors is connected to a power source, a high transient torque may be developed. These curves show how torque will vary with motor self-excitation voltage and the electrical angle by which line voltage leads motor voltage.

there may be sufficient time to permit the motor voltage to rise to a value considerably higher than the tap voltage. If, in addition, the load inertia is appreciably higher than that of the motor, excessive shaft torques may develop. It is suggested that cases involving manual switching be given special consideration, taking the particular motor characteristics and load inertia into account, before selecting a value of capacitor kva to be connected to the motor terminals to be switched with the motor.

This may be done as follows: The maximum motor voltage from self-excitation by a trial selection of capacitors can be determined. From Figure 3 for this motor voltage, the maximum electrical torque can be determined. The maximum mechanical torque will be less than the electrical torque in the same proportion that the load inertia is less than the total inertia of motor and load. The capacitor rating should be selected by trial such that the maximum mechanical torque in the shaft and coupling, determined in this manner, does not exceed six times normal. As previously indicated, this procedure is not necessary if the switching time is less than about .3 second, as would be the case for most electrically-operated motor starters.

When capacitors are connected to the motor terminals, they supply some of the motor-magnetizing requirements, so the actual line current is less than it would be without capacitors. If the capacitors are connected to the motor starter on the load side of the thermal overload device as shown in Figure 4, the overload relay will not provide proper protection to the motor if it is selected for the uncorrected motor full load current. The relay should be selected for a smaller current rating commensurate with the reduced line current due to the effect of the capacitors.

The per cent reduction in line current due to capacitors is shown in Table I. Note the large reduction in line current for the slow speed motors.

The standard open type squirrel cage induction motor will carry 115 per cent of the rated load at rated voltage and frequency with possible slight differences in power factor and efficiency. The overload relay setting can therefore be selected on the basis of the 1.15 service factor. The reduction in current as listed in Table I applies for either the 100 or 115 per cent loading. Examination of data for motors of various horsepower and speed ratings have shown this to be true.

Excessive overvoltages (several thousand volts) have been observed in current transformer secondary circuits of motor circuits with shunt capacitors for rotating machine protection or power factor improvement. Referring to Figure 5, when a de-energized capacitor is switched on to the bus it initially appears as a short circuit since the capacitor voltage cannot be changed instantaneously. Therefore, the instant the switch is closed the system voltage is distributed in the impedance from the bus to the capacitor, and since the impedance of the current transformer may constitute a major portion of this circuit impedance, it may assume the major part of the voltage drop. The voltage as viewed from the transformer secondary will be increased by the turn ratio. The magnitude of this voltage will also depend upon the volt-ampere burden in the transformer secondary circuit; the larger the burden in volt-amperes the higher the voltage. The amount of capacitors at the motor terminals has very little effect on the magniture of the voltage.

Many types of protective devices can be used in the current transformer secondary circuit, such as a shunting resistor, cutout, or filter. Very effective protection is provided by a by-pass device of a ceramic material having a non-linear resistance characteristic designed to shunt the current transformer secondary treminals and thus limit the magnitude of the overvoltage. This does not cause any objectionable error in secondary current within the operating range.

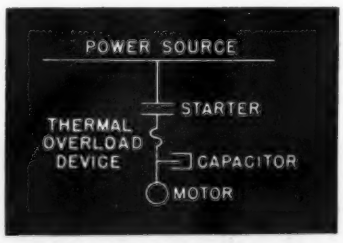


Fig. 4. Diagram showing relative location of capacitors and thermal overload device.

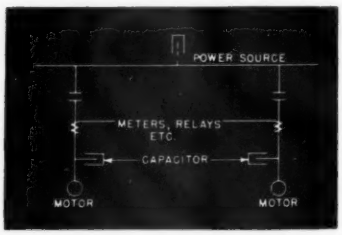


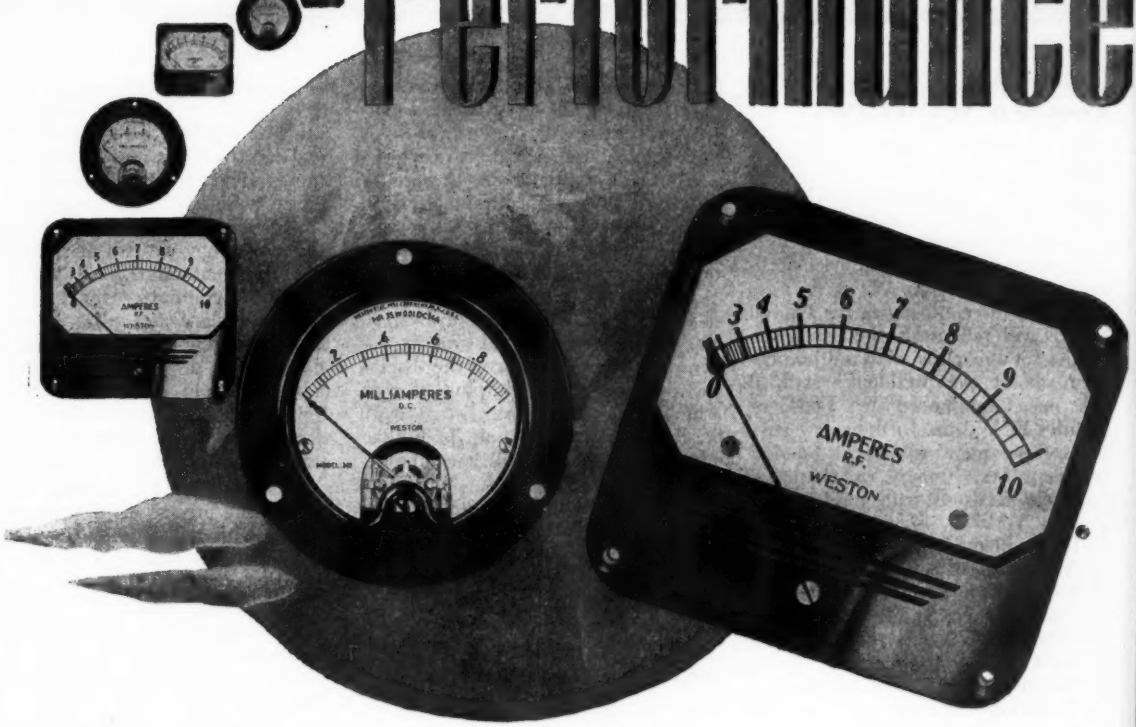
Fig. 5. Circuit arrangement producing overvoltage in current transformer secondary circuit.

How many capacitors can be safely applied? The recommended capacitor ratings listed in Table I are selected conservatively for the motor and its drive.

The overvoltage due to self-excitation will usually be within the maximum value (110 per cent) normally permitted for continuous motor operation. The transient torque occasioned

(Continued on page 75)

known Performance



for destinations known or unknown

Today, our electrical equipment encircles the globe; some serving at Greenland's ice cap or in Kiska's fogs . . . others stewing in the swamps of a Pacific atoll.

With the destinations of war-products totally unknown, manufacturers logically have preferred "building-in" WESTONS on their control panels. They know that a WESTON will perform dependably *anywhere* . . . that there is sound reason behind WESTONS acceptance as the *international standard.*

And tomorrow, with equipment reaching known markets, instrument preferences will remain unchanged. For while human life no longer will be at stake, *reputations will.* So manufacturers will continue to "build-in" the instruments which consistently tell-the-truth . . . to build broader market acceptance and customer good-will, and assure highest efficiency from the machines which bear their name.

- Laboratory Standards
- Precision DC and AC Portables
- Instrument Transformers
- Sensitive Relays
- DC, AC, and Thermo Switchboard and Panel Instruments
- Specialized Test Equipment
- Light Measurement and Control Devices
- Exposure Meters
- Aircraft Instruments
- Electric Tachometers
- Dial Thermometers

Weston

WESTON ELECTRICAL INSTRUMENT CORPORATION
FRELINGHUYSEN AVENUE, NEWARK 5, NEW JERSEY

FOR OVER 55 YEARS LEADERS IN ELECTRICAL MEASURING EQUIPMENT

NEWS of the INDUSTRY
National and Southern

G. E. VICE-PRESIDENTS ASSIGNED NEW DUTIES

To co-ordinate General Electric's widely diversified interests and afford better service to the company's wartime customers, both military and those industries manufacturing war materials, 10 commercial vice-presidents, representatives of every sales district of the company in the United States, will relinquish their responsibilities for apparatus sales and become members of the president's staff, it has been announced by President Charles E. Wilson. In their new positions these men will report to vice-president E. O. Shreve, in charge of customer relations with headquarters in New York.

Those affected by the change are: R. M. Alvord, of San Francisco; T. F. Barton, of New York; W. O. Batchelder, of Chicago; L. T. Blaisdell, of Cleveland; W. B. Clayton, of Dallas; E. H. Ginn, of Atlanta; A. L. Jones, of Denver; T. S. Knight, of Boston; A. S. Moody, of Portland, Ore.; and C. K. West of Philadelphia.

"In addition to better co-ordinating the company's many interests, these men will also assist the various departments and the affiliated companies in all customer relations in their respective territories," Mr. Shreve stated. "I feel sure this new setup will greatly strengthen our ability to help our many wartime customers."

Simultaneously Chester H. Lang, vice-president and apparatus sales manager, announced new district managers of apparatus sales to take over the duties formerly handled by these commercial vice-presidents. They are: C. E. H. Palmer, of New Haven, the New England district with headquarters in Boston; W. J. Dorworth, of Philadelphia, the Atlantic district; C. L. Redd, of Birmingham, the Southeastern district with headquarters in Atlanta; C. W. Fick, of Cleveland, the East Central district; R. I. Parker, of Chicago, the Central district; H. A. White, of Dallas, the Southwestern district; F. H. Doremus, of Denver, the Rocky Mountain district; A. G. Jones, of San Francisco, the Pacific district; and J. R. Murphy, of Spokane, the Northwestern district, with headquarters in Portland; T. F. Barton, of New York, will continue for the present to act as the New York district manager in addition to his new duties on the president's staff.

These appointments, as well as those of the commercial vice-presidents, became effective immediately.

WIRING COMMITTEE REVIEWS HANDBOOK

The Technical Subcommittee of the Industry Committee on Interior Wiring Design met in New York recently for the purpose of reviewing several sections of the revised draft of the Handbook of Interior Wiring Design. The draft under review consists of two sections, one on Residential Wiring Design and the other on Farmstead Wiring Design.

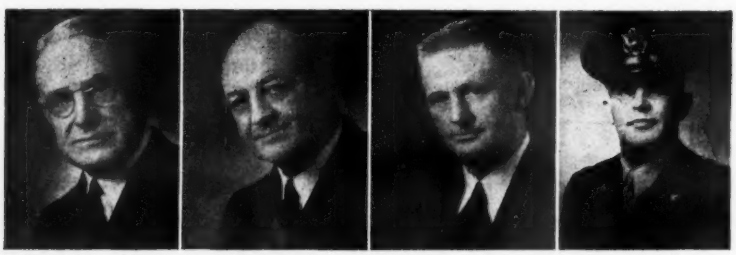
The Residential Wiring Design draft in its present form appears somewhat simplified from the original issue. The draft on the Farmstead Section had been sent nation-wide, prior to the meeting of the Technical Subcommittee, to a number of members of the American Society of Agricultural Engineers in the educational, commercial and governmental fields interested in rural electrification and in farm structures; and also to others outside of the Society who had similar interests.

Over ninety individuals and groups received a copy with the request that they comment on the material, thus giving the committee the benefit of their experience and advice. Seventy-three per cent responded with, in many cases, most constructive comments, and, in some cases outright approval. The Subcommittee reviewed all the comments submitted, giving careful consideration to each one.

Both sections of the Handbook are now in the process of being redrafted in line with the action taken by the Technical Subcommittee at its meetings. The revised draft will be submitted to each member of the Technical Subcommittee for final approval. It is expected that a meeting of the Industry Committee on Interior Wiring Design will be called to meet sometime during the month to act on the material prepared by the Technical Subcommittee.

Upon completion of the Farmstead and Residence Wiring Standards, work will commence on revising the wiring standards for multi-family dwellings and for commercial, public and industrial occupancies.

The Technical Subcommittee consists of A. Carl Bredahl, chairman, Westinghouse Electric and Manufacturing Company; Arthur Abbott, NEMA; Leo Dolkart, Leonard Construction Company; H. G. Knoderer, General Electric Company; Morris H. Lloyd, Niagara, Lockport and Ontario Power Company; George McKee, George H. McKee Company, Inc.; H. R. Stevenson, Detroit Edison Company; C. P. Wagner, Northern States Power Company; and C. A. Ward, Electric Bureau of Paterson, N. J.



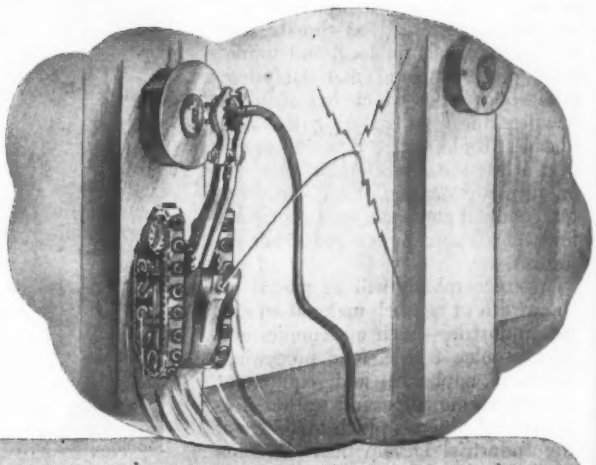
E. H. Ginn — W. B. Clayton — H. A. White — Carter Redd

INDUSTRIAL ADS TO TELL NATION ABOUT GEORGIA

With an aim to attract new industries to the state, the Georgia Power Company has announced its intention to carry its national advertising cam-

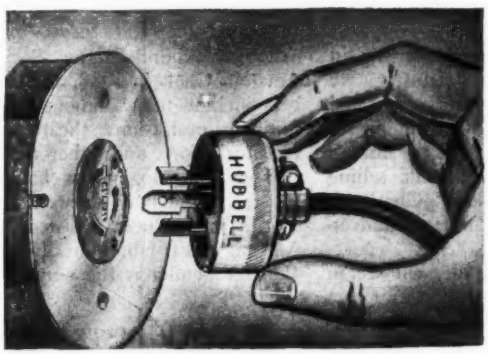
Post-war pipe dreams you don't need to wait for

AUTOMATIC PLUG REPLACER — When the plug falls out, this electronic robot scoots across the floor, picks up the plug, climbs the wall, and, Presto! — the plug is replaced. Lots of plants might use something like this, but is it worth waiting for?



RIGHT NOW YOU CAN PLAN FOR—

CONNECTIONS THAT STAY PUT— TWIST-LOCK PLUGS AND RECEPTACLES



Hubbell Twist-Lock plugs, caps and receptacles never part in the middle of a job, no matter how hard they are yanked. Yet the connection is quickly made and released by a simple twist of the cap. Heavy phosphor-bronze, riveted blades and impact-resisting bodies make for longer, trouble-free life. Sizes and types for nearly every purpose, and for 2, 3 and 4 wire circuits. As you rewire for reconversion, let your GRAYBAR Man help you or your contractor apply Twist-Lock and other Hubbell wiring devices to your particular needs.

GRAYBAR'S NATIONWIDE NETWORK

of more than 80 warehouses assures you a convenient local source of supply for more than 60,000 electrical items — backed by experienced application aid on problems of wiring, lighting, intercommunication and power apparatus. A GRAYBAR Man near you is ready to make your electrical supply problems his personal responsibility. Why not take advantage of his time-saving assistance?

4502

via GraybaR

ATTENTION — MANUFACTURERS OF ELECTRICAL EQUIPMENT AND APPLIANCES: To help plan for more efficient post-war distribution — national or regional — write for this new booklet: "Tomorrow's Electrical Distribution — via Graybar."

GRAYBAR ELECTRIC COMPANY

IN OVER 80 PRINCIPAL CITIES

Executive Offices: 420 Lexington Ave., N. Y. 17, N. Y.

paign into the new year, thereby renewing an important contribution to the Georgia Better Home Towns Program.

The advertising will continue to highlight Georgia's many industrial advantages, such as good climate, ample raw materials for local and immediate processing and manufacturing, native-born labor which has acquired new technical skills during the war, liberal attitude toward business on the part of the state government, fair taxes, adequate supplies of soft, pure water, good rail and water transportation, low-cost electric power and other resources.

Again, emphasis will be placed on the wealth of research material on specific industries—such as ceramics and glass, woolen textile, food processing, electrical appliance and equipment manufacturing, shoe and leather, furniture and others—which members of the Industrial Development Division of the company have gathered in several years of intensive study of those industries best suited to Georgia, and which is already on file.

The advertising schedule for the first six months of 1945 has advertisements slated for *Fortune, Business Week, Modern Industry, New York Times, Wall Street Journal, Journal of Commerce,* and *Commercial and Financial Chronicle.*

Company industrial advertisements appeared in January editions of all these publications. Total circulation of the publications used is slightly less than a million.

KELVINATOR SCORES WITH TELEVISION SHOW

The first commercial television program featuring Kelvinator electric ranges and refrigerators was presented recently by the Kelvinator division of Nash-Kelvinator Corporation in opening its new television series, "Society of Amateur Chefs – Fun in the Kitchen," a 30-minute comedy program on WABD (Dumont).

Admittedly an experiment, the program was praised by critics as one of the best television programs ever presented. The first Kelvinator show featured Ben Irvin Butler, president of the society, John Reed King, nationally-known network announcer, Otto (Little King) Soglow, and Rube Goldberg, noted cartoonists, as guest stars. Zora Layman, popular radio and recording singer, introduced a new song "Fun in the Kitchen," written by Frank Luther for the new series.

"In line with Kelvinator's policy of investigating new advertising media to maintain merchandising leadership in the kitchen appliance industry, we recognize that television is destined to become a major advertising factor in the coming years, and we intend to be prepared to utilize its selling advantages to the fullest," Charles J. Coward, Kelvinator's director of advertising, said.

Charles Coward, director of advertising for Kelvinator division of Nash-Kelvinator, reviews script at debut of the company's experimental television program series, "Society of Amateur Chefs—Fun in the Kitchen," in the WABD (Dumont) studio in New York. Left to right are: Rube Goldberg, noted cartoonist; John Reed King, popular network announcer and emcee; Coward; Otto Soglow, creator of the "Little King" cartoons; Henry Hempstead (looking over camera), vice-president of Geyer, Cornell & Newell; Ben Irvin Butler, president of the Society, and a Dumont cameraman.

"We believe the trade will see in this television presentation, another aggressive example of Kelvinator's retail-minded sales and advertising policies."

Attended by one of the largest crowds of spectators to witness a television show, the initial Kelvinator program opened with the cast struggling with complicated gadgets in a workroom trying to create a "Rube Goldberg machine" to simplify cooking. Following several laugh-provoking experiments, the actors moved into a beautifully constructed French provincial kitchen, equipped with a Kelvinator refrigerator, and electric range where, accompanied to humorous antics of Soglow and Goldberg, Butler and King easily produced an appetizing meal with the aid of the Kelvinator kitchen unit.

Present plans provide for a series of the programs with two different guests on each telecast.

Butler, former food editor of Look magazine, founded the Society of Amateur Chefs in 1938, and its members include many famous leaders in business, professions, theatre, motion pictures, sports and other fields.

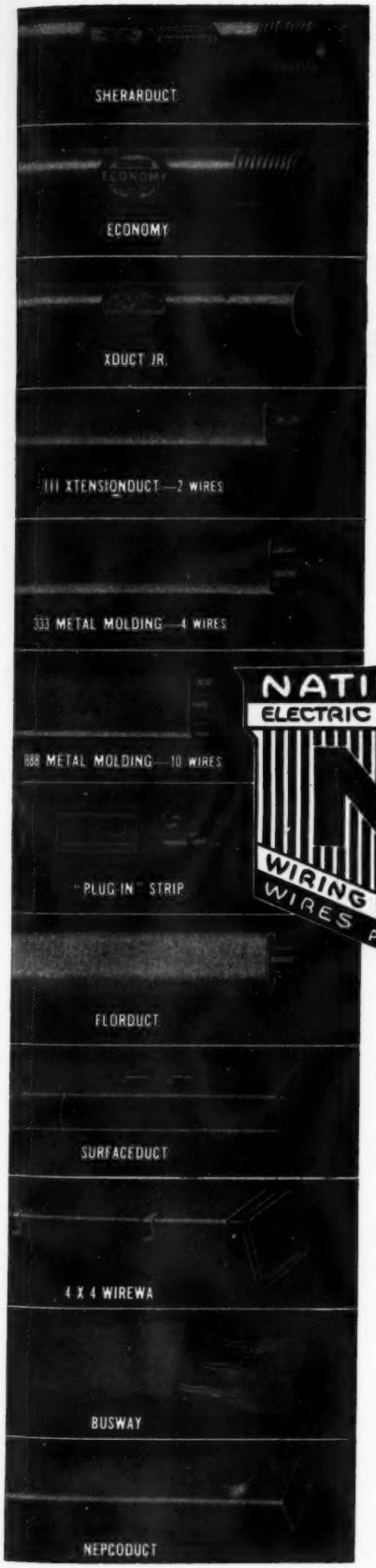
The new program is handled by Geyer, Cornell & Newell. Eleanor Larsen is producer, assisted by Jack Mason. Ted Estabrook is directing and Barbara Bender is the writer.

APPLIANCE DISTRIBUTION PLANS COMPLETED BY G. E.

C. R. Pritchard, general sales manager of the appliance and merchandise department of General Electric, Bridgeport, Conn., announces that the department's postwar distributing organization for major appliances is completed.

The department will have about 60 wholesale distributing outlets for G-E refrigerators, ranges, water heaters, home laundry equipment, dishwashers, sinks and kitchen cabinets. These distributors, operating in assigned trading areas, will maintain sales organizations and local warehouse stocks at over 125 points, and will be prepared to serve the retail dealers in every city and town in the United States, Hawaii and Alaska.

Better than 50 per cent of the distributing outlets will be independent



NATIONAL
ELECTRIC PRODUCTS
WIRING SYSTEMS
WIRES AND CABLES

In post-war building and remodeling, critical customers will look for electrical products of the highest quality and best performance. They will expect the promises of a great, new electrical age to be fulfilled. Contractors, their licensed craftsmen and electrical engineers who rely on the National Electric System of raceways, wires and cables will more than fulfill these expectations. And the user will find in National Electric products greater serviceability, longer life, and precise adaptability to specific requirements.

Conduits
Surface Raceways
Wires and Cables
for every purpose

National Electric
PRODUCTS CORPORATION
Pittsburgh, Pa.

wholesalers, many of whom have been with G. E. since the General Electric refrigerator was first introduced in 1927. While there have been some divisions of large territories and appointments in smaller markets, G. E. will have about the same number of independent disrtibutors as it had before the war.

General Electric will operate its own wholesale distributing branches in nine major markets. Seven of them, located in New York, Newark, Cincinnati, St. Louis, Pittsburgh, Los Angeles and Philadelphia are new. They were added to the two branches which General Electric operated before the war. Mr. Pritchard pointed out that these branches are in large metropolitan markets where product specialization is essential, and that the branches would devote all of their efforts to the promotion and sale of General Electric's major appliances. At this time, he said, G. E. has no plans for expansion of its factory branch program beyond these major metropolitan markets.

The General Electric Supply Corporation will continue as a wholesale distributor of G-E's major appliances in about the same number of markets as before the war.

In accordance with industry practice, and in order to reach all types of retailers, G. E. will continue to distribute its traffic appliances through multiple wholesale outlets serving the electrical, department and furniture store, hardware, jewelry, drug, mail-order, utility and chain-store trades.

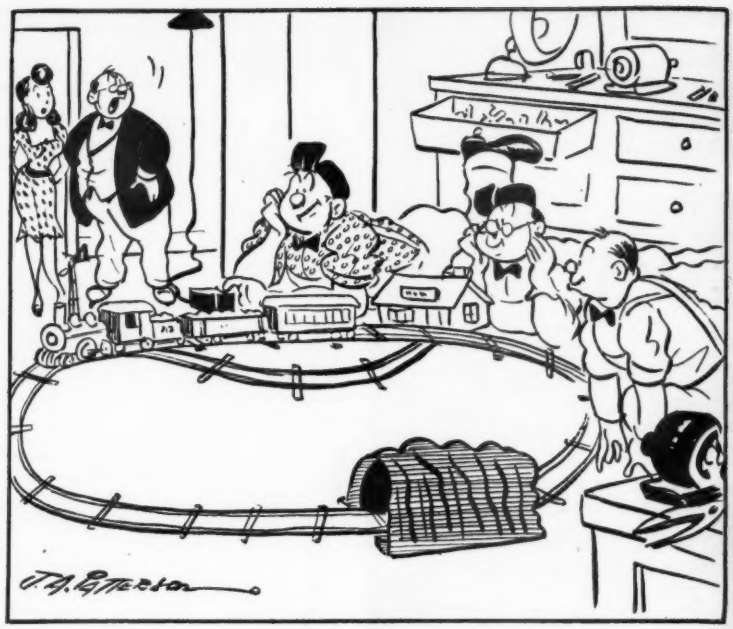
DISTRIBUTION FOR CLARION RADIOS

The Electric Sales and Service Company, 209 Walton St., N. W., Atlanta, Ga., has been appointed as distributor for Clarion radios in the Atlanta territory, it was announced by Reau Kemp, general selas manager of the Warwick Mfg. Co., Chicago.

Wholesale dealers in electrical supplies and specialties, the Electric Sales and Service Company also have a branch office in Savannah.

P. C. Gilham, Jr., president of the company, said he felt his firm's assignment as distributors for Clarion radios is "one of the most important moves in connection with our postwar merchandising program."

Although the Warwick Company, manufacturers of Clarion radios, is now engaged entirely in war production, a complete line of the finest new sets will be ready for shipment in the shortest possible time after War Production Board restrictions are lifted, Mr. Gilham said.



"Hereafter, Miss Lovelace, we take in no more toy electric trains to repair!"

UNIVERSAL OUTLINES DISTRIBUTION PLANS

In planning a system of distribution for its postwar lines of products, Landers, Frary & Clark has decided to continue selling through the conventional and established channels of distributors and retailers according to B. C. Neece, vice-president and general sales manager.

After careful study of its past experience in the marketing of its appliances and housewares, the company has determined upon this method of distribution for its postwar lines which will include new and improved items in addition to the already famous Universal electrical appliances and housewares.

"Our sales executives have carefully analyzed and studied the various methods of distributing our merchandise and in our opinion we will be able to provide the greatest values at the lowest possible cost by marketing our products through the conventional wholesale and retail outlets," Mr. Neece said.

"We fully realize the ultimate need for economics in production and distribution and definite progress in this direction is required by the entire appliance and housewares industries if the optimistic goals of postwar volume are to be attained.

"Universal will have as many distributors and dealers as are necessary to assure thorough and adequate coverage throughout the country and each territory is being carefully analyzed with respect to the number and type of outlets for the potentials involved.

"Our prewar dealer organization has been increased through the franchising new 'U Plan for V-Day' retail outlets and Universal distributors are now appointing additional dealers to complete necessary retail coverage. Distributor appointments in all markets have been consummated with the result that a thorough marketing organization is ready and awaiting the green light for production resumption.

"Universal's selling organization in the field will work directly with its distributors in promoting the Universal line. Through the war years this field force has been streamlined and its personnel carefully selected to carry out the most effective selling job. When the war is over and we are again in peacetime manufacturing, our sales staff and those of our distributors and dealers will be organized and trained for the big selling program ahead."

WASHINGTON MOTOR SHOPS ORGANIZE NISA CHAPTER

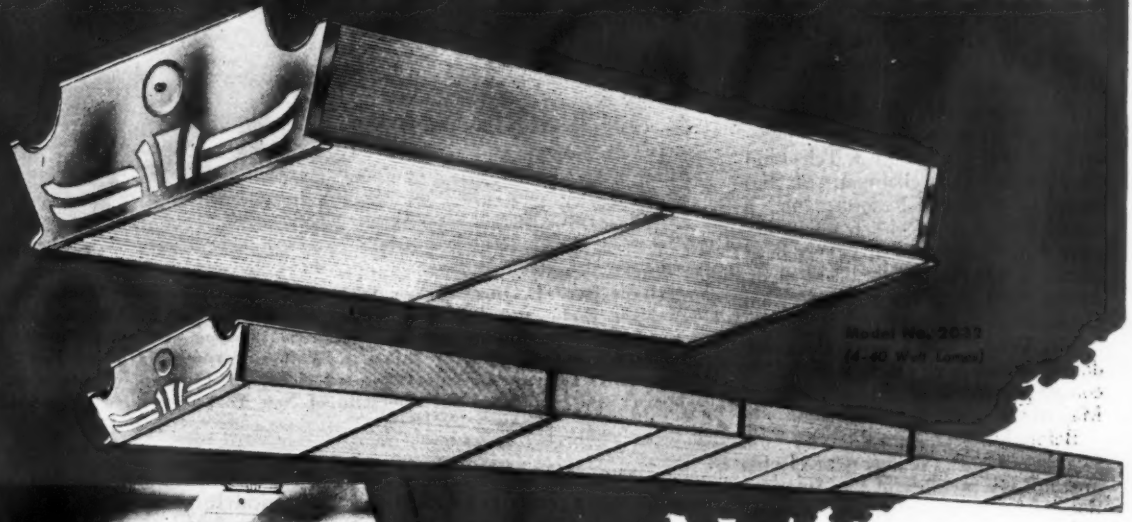
A local chapter of the National Industrial Service Association has been organized in Washington, D. C., and will be known as the Electric Motor Service Association of the District of Columbia.

Officers of the new chapter include the following: president, Henry J.

MITCHELL U.R.C. LUMINAIRE

America's FIRST CHOICE FOR

OFFICES and DRAFTING ROOMS



Mitchell U.R.C. Luminaires relieve eye strain, increase ease of work and contribute to comfort of employees.

Continuous rows of Mitchell U.R.C. Luminaires provide high illumination level without glare over entire drafting room.

HIGH INTENSITY ILLUMINATION WITH LOWEST SURFACE BRIGHTNESS

This is the *original* U.R.C. fluorescent fixture that revolutionized commercial lighting from the day it was first introduced by MITCHELL. This is the unit that brought new lighting efficiency and comfort to office work by combining maximum light output with minimum glare (surface brightness). It is adaptable for every type of interior—pendant or surface mounting, individual or continuous row. Takes less time to install than any other commercial fixture. Same low original price!

To get the original . . . *buy or specify MITCHELL U. R. C. Luminaire*

U.R.C. LUMINAIRES

Get full details from your Mitchell distributor
Or write for U. R. C. Brochure

MITCHELL MANUFACTURING CO.

2525 Clybourn Avenue • Chicago 14, Illinois

West Coast Factory & Sales Office:
1019 N. Madison Ave., Los Angeles 27, Cal.

MITCHELL FLUORESCENT

Dorr, Central Armature Works, Inc.; secretary, H. R. Mullen, Warfield & Sanford, Inc.; and treasurer, L. H. Harris, Electric Equipment Company.

The association reports that it now has approximately 100 per cent membership among the Washington motor service shops.

MAJESTIC RECORDS, INC. ELECTS NEW PRESIDENT

James J. Walker, former Mayor of New York City, has been elected president of Majestic Records, Inc., New York City.

That announcement was made by Eugene A. Tracey of Chicago, president of Majestic Radio & Television Corporation and chairman of the board of Majestic Records, Inc., a major subsidiary of the parent company. Mr. Walker had previously been elected a member of the board of directors of Majestic Radio & Television Corporation.

Mr. Walker will assume the presidency immediately and will be in complete control of the activities of Majestic Records, Inc.

Before his election to the New York Legislature, Mr. Walker was elected and still is a member of the American Society of Composers, authors and publishers, and is also president of the National Association of Performing Artists succeeding Fred Waring.

The new president of Majestic Records, Inc., organized the Motion Picture Theatre Owners Association and was also counsel for the New York Theatre Owners Chamber of Commerce. His long experience in executive and administrative work plus his familiarity and wide association with the entertainment world, makes him, in the opinion of Majestic, a distinct asset and an able leader for the new company.

Mr. Tracey has also announced the election of the following other officers to the board of Majestic Records, Inc.: Executive vice-president, Eli E. Oberstein of New York; vice-president, Parker H. Erickson, of Chicago; treasurer, C. E. Underwood, of Chicago; secretary, Curtis Franklin, of New York.

As announced previously, the new company will have its executive offices and recording studios at 29 West 57th Street. The production plant and general offices will be in Newark, New Jersey.

It is the intention of the new concern to manufacture all types of recorded music ranging from classics and popular tunes to a wide variety of specialities.

Majestic Radio & Television Corporation, the parent company, has manufacturing plants in Chicago and St. Charles, Illinois, and they are now fully occupied with the production of war material.

Mr. Walker at present is the impartial chairman of the Cloak and Suit Industry.

Majestic Records, Inc., of New York City, recently organized subsidiary of Majestic Radio and Television Corp., of Chicago and St. Charles, Ill., has announced the appointment of its officers. Looking over plans for the new concern are (seated, left) James J. Walker, former Mayor of New York, president; Eugene A. Tracey (seated right) of Chicago, chairman of the board; and (standing) Eli Oberstein of New York, executive vice-president.

HOFFMAN SUPPLY TO HANDLE STANDARD LINE

Hoffman Supply, with offices at Albuquerque, New Mexico, and Abilene, Texas, have been appointed representatives for The Standard Transformer Company, Warren, Ohio. This well-known firm will cover the state of New Mexico and the northern half of Texas. Handling the entire Standard line, they will give sales and engineering service on transformers for distribution, power, metering, street lighting, and testing, dry and liquid filled types.

THREE-STATE GROUP TO STUDY NEW CODE

A joint conference of the electrical industry from three states will be held in Shreveport, on March 26, 27 and 28, to study the new rules of the National Electrical Code under which postwar wiring will be installed. The meeting is being sponsored by the Texas, Louisiana, Mississippi, and North Louisiana—East Texas chapters of the International Association of Electrical Inspectors, according to report from Frank G. Camus, city electrician for Shreveport.

Chief electrical inspectors from principal cities of the three states will attend the conference, along with electrical contractors, electricians, jobbers, manufacturers, and utility company representatives. Nationally known code authorities will review all the new rules which will be up for final action during the May meeting of the Electrical Committee of the National Fire Protection Association.

The meeting will be held in the Louisiana Caddo Hotel, Shreveport, and those planning to attend should make hotel reservations as early as possible.

TRANSMITTER-RECEIVERS FOR USE IN LIFEBOATS

The day of telephone conversations between lifeboats at sea has arrived!

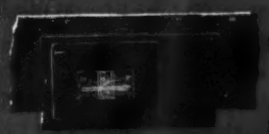
In the ceaseless campaign to develop and improve safety equipment for use aboard cargo vessels, the United State Maritime Commission has cooperated in the design of a new transmitter-receiver for use in lifeboats. It can be operated by non-skilled men and will be equipped for two-way manual radio telegraph and radio telephone, also automatic radio telegraph transmission. The radio telephone will enable occupants of life-

With BULLDOG BUStribution DUCT

you can get increased capacity, flexibility, completeness, through this wide variety of Circuit Protective Plugs

VACU-BREAK SWITCH PLUG

Fusible and non-fusible, 30 to 800 amp., 2 or 3 pole, 575 volts or less, or 4 pole solid neutral 250 volts A.C. H.P. rated.



TYPE "PB" BUS PLUG

Cover operating types, in 30, 60 or 100 amp. Horsepower rated. Fusible and non-fusible, 575 volts or less.

CIRCUIT BREAKER PLUG

For use where an automatic protective device is required, with either rigid or flexible conduit connection, capacity, 600 amp., 600 volts.

CIRCUIT MASTER PLUG

Designed for single pole circuits for 120 volts and 2 pole for 208 volts, 15 to 50 amp.

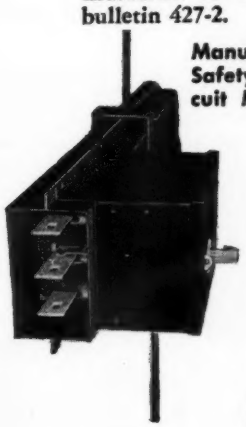
The wide variety of pre-fabricated circuit protective tap-off plugs available for use with BUStribution DUCT is just another example of the thoroughness of BullDog engineering.

Built for every circuit protective purpose, BullDog Standard Bus Plugs give you both increased capacity and complete flexibility for rearrangement of production machinery. Additional outlets can be installed quickly and inexpensively—change-overs can be made in minimum time, with minimum labor cost and no material loss.

All Bus Plugs fasten securely to the flanges of the duct section at the plug-in openings, may be mounted on either or both sides of the duct and require no auxiliary screw clamps or fittings. Engagement with the bus bars is made through spring reinforced contact fingers so designed that accidental contact with live parts is impossible.

For complete information on the various BullDog Bus Plugs illustrated in this advertisement, write for our illustrated bulletin 427-2.

Manufacturers of a complete line of Vacu-Break Safety Switches, Panelboards, Switchboards, Circuit Master Breakers and BUStribution SYSTEMS.



MOUNTED PLUG

This end view of a plug mounted on duct shows how the copper "contact" fingers of the plug clamp over the bus bars in the duct.

Speed Victory — Buy More War Bonds!

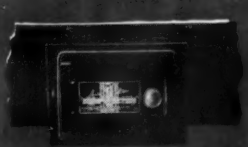
BULLDOG

ELECTRIC PRODUCTS CO.

BOX 177, R. PK. ANNEX
DETROIT 32, MICHIGAN

BullDog Electric Products of Canada, Ltd., Toronto, Ont.

Field Engineering Offices in All Principal Cities

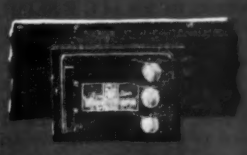


TEMPERATURE INDICATING PLUG

When temperature of bus bar exceeds 20° C. (212° F.) (20° C. ambient plus

CAPACITOR PLUG

Convenient and flexible means for improving Power Factor. Available from 1



GROUND DETECTOR PLUG

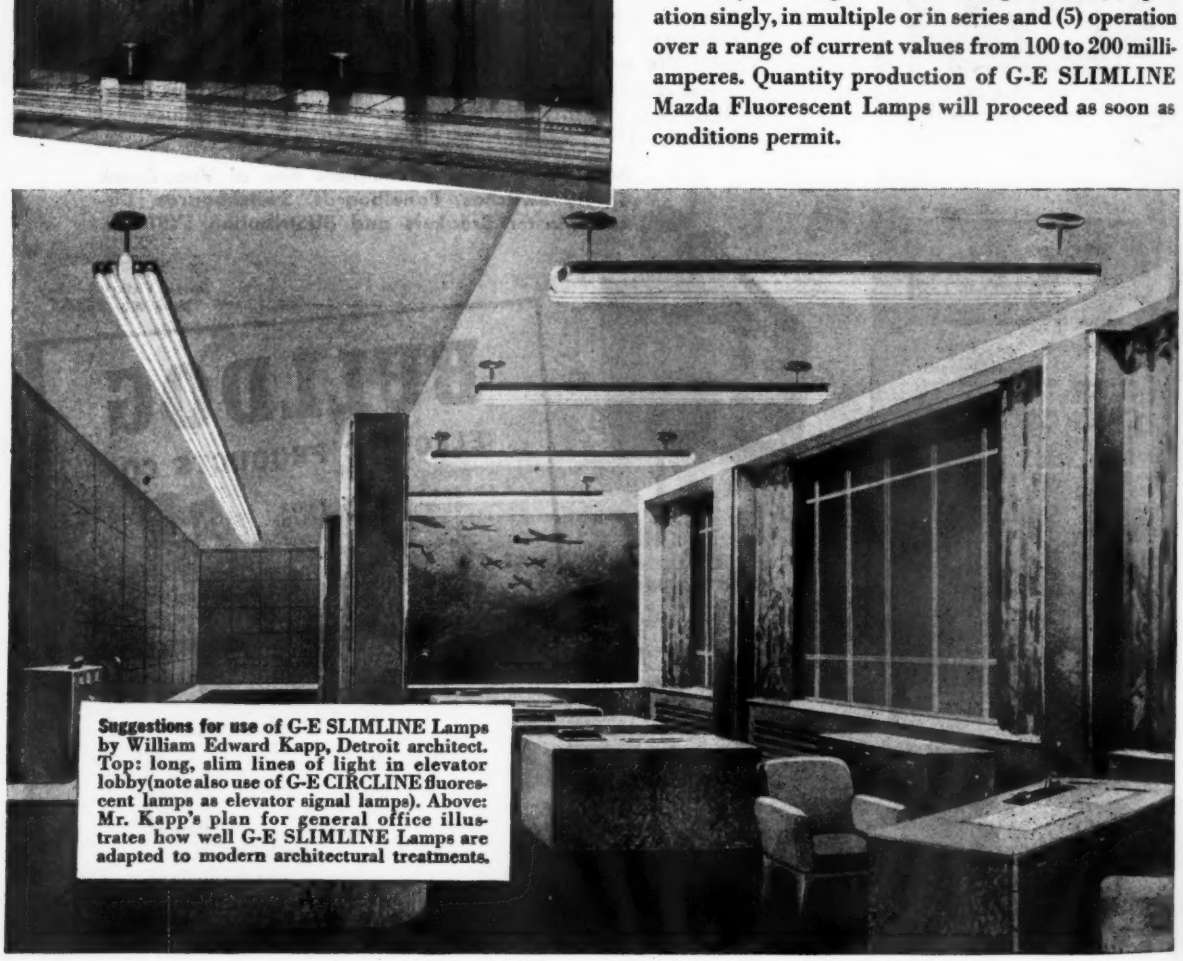
7½ watt externally mounted Mazda

TWO NEW NAMES

1 G-E SLIMLINE fluorescent lamps

Several months ago, General Electric announced the G-E SLIMLINE—four new fluorescent lamps with unique new design and operating advantages. These slimmer fluorescent lamps, up to eight feet in length, promise a wealth of new lighting opportunities, especially in the commercial field.

G-E SLIMLINE lamps will be available in two diameters: three-quarters of an inch (42″ and 64″ long) and one inch (72″ and 96″ long). Other outstanding features: (1) instant starting, (2) long life, (3) higher efficiency—average of 60 lumens per watt, (4) operation singly, in multiple or in series and (5) operation over a range of current values from 100 to 200 milliamperes. Quantity production of G-E SLIMLINE Mazda Fluorescent Lamps will proceed as soon as conditions permit.



Suggestions for use of G-E SLIMLINE Lamps by William Edward Kapp, Detroit architect. Top: long, slim lines of light in elevator lobby(note also use of G-E CIRCLINE fluorescent lamps as elevator signal lamps). Above: Mr. Kapp's plan for general office illustrates how well G-E SLIMLINE Lamps are adapted to modern architectural treatments.

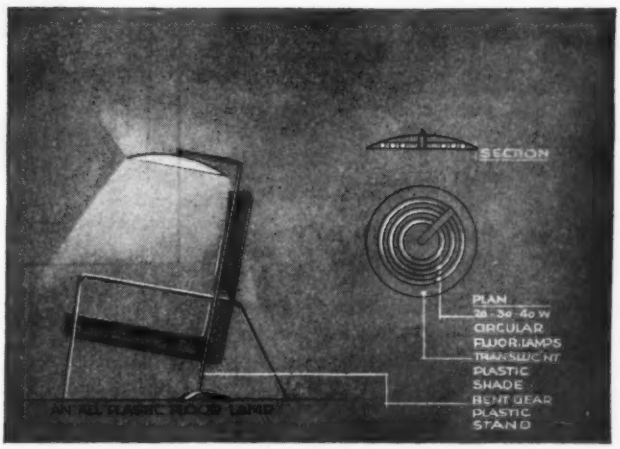
TO REMEMBER:

2 G-E CIRCLINE fluorescent lamps

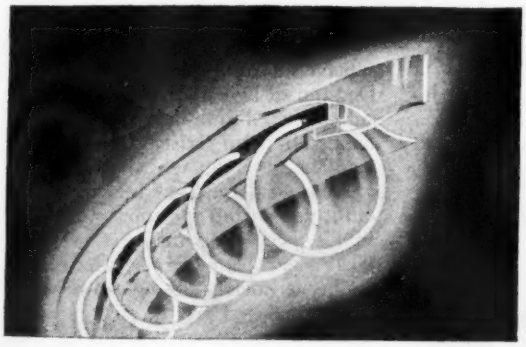
Architects commissioned by G-E to suggest creative ideas for postwar lighting, have been quick to take advantage of the dramatic new design opportunities afforded by G-E CIRCLINE Fluorescent Lamps. Examples are the illustrations on this page.

Present plans call for three circular lamps with approximate outside diameters of 8½, 12¼ and 16 inches. Bulb diameters are expected to range up to 1¼ or 1½ inches, and approximate watts from 15 to 50.

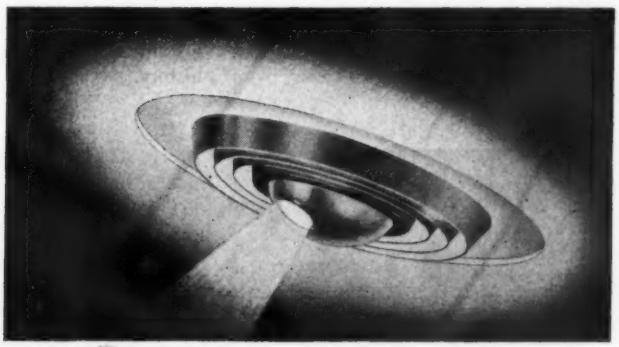
In addition to their use in commercial lighting applications, circular fluorescent lamps probably will find a place in portable and ceiling lamps for the home, either alone or in combination with filament lamps. Final design and production of G-E CIRCLINE Fluorescent Lamps will proceed when conditions permit.



Nest of three G-E CIRCLINE Fluorescent Lamps is used in this floor lamp. Shallow plastic shade gives maximum light. Design suggested by N. A. Owings, of Skidmore, Owings and Merrill, architects, Chicago.



Wurdeman & Becket, architects, Los Angeles, envision use of G-E CIRCLINE Lamps in this fixture for stores. Rings of light at regularly spaced intervals in ceilings are designed to direct customer traffic to rear of store. The cast phenolic reflector suggested here would help direct light down on the aisle.



Another Wurdeman & Becket design for a ceiling luminaire for stores, combining G-E CIRCLINE Lamp with filament lamps and spotlamp. At center is R-40 spotlight for dramatic highlighting of merchandise. Above it, a G-E CIRCLINE lamp illuminates bowl. Two 100-watt filament lamps, one on each side of center bowl, furnish general illumination.

BUY WAR BONDS AND HOLD THEM

Hear the G-E radio programs: "The G-E All-Girl Orchestra", Sunday 10:00 p. m. EWT, NBC; "The World Today" news, Monday through Friday 6:45 p. m. EWT, CBS; "The G-E Houseparty," Monday through Friday 4:00 p. m. EWT, CBS.

"To make G-E Lamps STAY BRIGHTER LONGER" — The Constant Aim of G-E Lamp Research

G-E MAZDA LAMPS

GENERAL ELECTRIC

boats so equipped to maintain communications between lifeboats. The transmitter-receiver will operate on pretuned International distress frequency of 500 KC and on the high frequency adopted by the air/sea rescue program to permit an effective tie in with this undertaking and provide the maximum of rescue capabilities.

The transmitter-receiver is operable entirely by the use of a hand-powered generator which permits unlimited operation without the use of batteries and their inherent short life. The unit is entirely waterproof and embodies the use of balloon and kite antennas enabling an average transmitting range ten times that obtainable with the present lifeboat transmitter on 500 KC and a range above a thousand miles when used on the high frequency band.

"That will be, ha! ha! ha! $15.13 for fuses and tee! hee! hee! $47.19 for switch boxes and ho! ho! ho! $19.27 for tubing!"

TEXAS BRANCH OFFICE WINS SALES AWARD

The Dallas, Texas, branch of Fairbanks, Morse & Co., recently was presented the company's President Cup in recognition of having a larger volume of business than any other branch in 1944 in relation to its annual quota.

Presentation was made by Col. Robert H. Morse, president, to Harry J. Renken, manager of the Dallas branch. Both Manager Renken's name and that of R. H. Matthews, who topped the list of Texas field engineers, were engraved on the cup. This is the first time the cup has been won by a Southern branch since the presentation was inaugurated 12 years ago.

Colonel Morse paid warm tribute to the South in his presentation. America is expecting great things from postwar Texas, he said. He predicted a program of development of natural resources and of diversified agriculture possibly without parallel in American history.

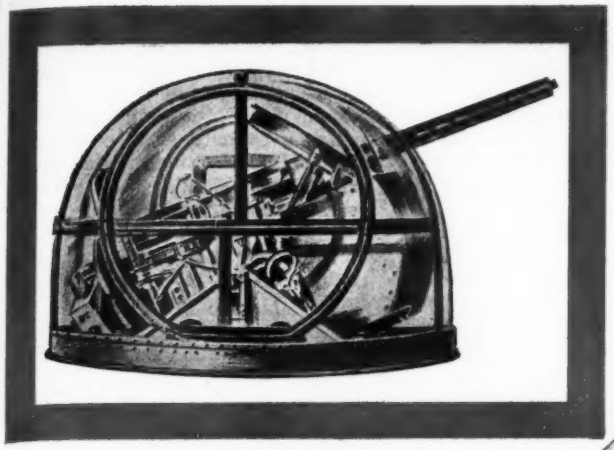
Dallas, Texas, branch of Fairbanks, Morse & Co., receives President's Cup for having larger volume of business in relation to its quota than any other branch in 1944. Shown, left to right: Robert H. Morse, Jr., general sales manager; Col. Robert H. Morse, president, who presented the cup; Harry J. Renken, manager, Dallas branch; and R. H. Matthews, who topped the list of Dallas field engineers in sales.

PACKAGED KITCHENS PLANNED FOR POSTWAR

Postwar will see "kitchen departments" in large department, home-furnishing, hardware, and appliance stores where a prospective customer may invite her family to an evening meal prepared by herself, under the supervision of a "store cook," then Dad can sit by with Mother while the automatic dishwasher "does" the dishes after the garbage disposall has whisked away the refuse. Then Dad can say "wrap it up"—and the complete outfit will do the operation over again in his own home the next evening. That is possible under plans for future appliance merchandising now being made, predicts Harry E. Warren, Hotpoint advertising manager.

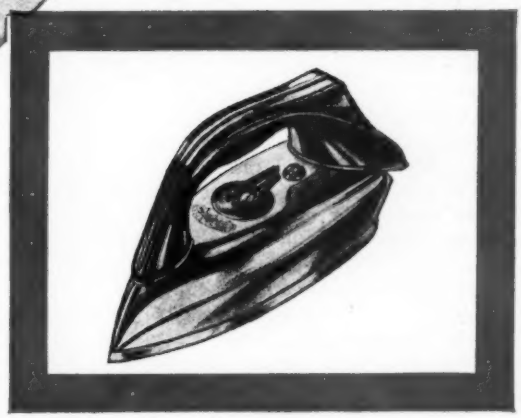
Merchandisers are agreed that the American home is ready for the complete "one-package" kitchen. Now, like the public which wants them, they are waiting to see what they will include. "Most of the individual appliances will be very similar to those designed for sale in 1942," with the big difference being in the manner in which these appliances are fitted into rooms designed for comfort and utility, and these appliances sold in "room packages," with the price plainly marked for the complete outfit of branded merchandise ready to operate as one unit.

Asserting that "package kitchens"—



Turret for TBM-2 Avenger Torpedo Bomber

IF BOMBER TURRETS WERE *AUTOMATIC FLATIRONS*



Samson Selective Speed Automatic Flatiron with Duo-Dial Control and Magic Eye

SAMSON UNITED COULD SUPPLY MORE THAN 200,000 A MONTH

The time may never come when Samson United will be asked to produce 200,000 *automatic flatirons* a month. But Samson has already proved that it *could* achieve this tremendous output by its production of one war item alone . . . the complete Turret for Grumman Avenger Torpedo Bombers. Month after month we have been satisfying the world's most particular customer . . . Uncle Sam . . . by meeting and exceeding quotas for this highly complicated, tough-to-build product.

When the fortunes of war again permit volume manufacture of household electrical appliances, SAMSON Automatic Flatirons will be ready for you to place in the hands of housewives who want the finest.

ELECTRICAL

SAMSON

APPLIANCES

SAMSON UNITED CORPORATION, ROCHESTER, N. Y.

Samson United of Canada, Limited, Toronto

all-electric groups of appliances sold for kitchen remodeling—will jump to immediate postwar leadership over all other types of household equipment. Mr. Warren said that Edison General Electric (Hotpoint) Appliance Company's planning guide, "Your Next Kitchen," had brought more than 80,000 dimes since April, and that 5½ per cent of the booklets mailed bring back a request for free blueprints of room floor plans offered in booklets.

Mr. Warren, who said that he had just returned from holding a series of meetings with distributors, utility heads, and company district offices over the country, remarked that merchandising authorities of leading stores are showing greater interest in package kitchens than has previously been shown in any appliance innovation.

Noting that uncertainty existed as to complete kitchen costs and basic equipment requirements among those asking for plans as well as among merchandisers, he said that all cost computations for room units will be based upon 10 per cent of construction cost for new homes, and a slightly lower percentage of total value of average property where remodeling is contemplated. The rule for price is "an all-electric kitchen in a home costing $7,500 and up will include electric refrigerator, range, cabinet sink with garbage disposall, built-in cabinet dishwasher, and sufficient base and wall steel cabinets to round out a well-designed kitchen." For homes costing less than $6,000, a dishwasher is not suggested; and where a home is in the $4,000 class, a "10 per cent" assembly of appliances should include electric refrigerator, range, cabinet sink, and one metal base and one metal wall cabinet for each appliance.

IMPROVED WIRING FOR CAROLINAS

Realizing the importance of adequate wiring in the postwar world, the Carolina Power and Light Company plans increasing promotion to improve wiring in the Carolinas.

The first effort of the company will be to bring wiring to the attention of its customers through advertising. Already several newspaper advertisements have been run in daily papers throughout its territory. This newspaper advertising will be continued on a regular schedule. All radio stations in the territory of the company are also carrying the adequate wiring story. They will mention adequate wiring at least once a week during the present period.

This constant appearance of ads in the newspapers and the constant repetition of the message over the air will in time reach a large majority of the customers.

The company will place a man in charge of a department to handle adequate wiring. First he will work alone, but as needs increase, and the proper type of men can be employed, he will build up a staff of adequate wiring experts. These men will be primarily interested in specifying wiring that will permit sale of all appliances possible without further disturbing wiring that is installed.

SYLVANIA ANNOUNCES NEW FLUORESCENT LAMPS

New fluorescent lamps providing instant starting, higher efficiencies, and simplified installation and maintenance are announced by Sylvania Electric Products, Inc., of Salem, Mass. They will be supplied in smaller diameters and new standard lengths up to 96 inches.

Operating without starters these lamps, designated as LS Types, may also be operated in series on a single ballast at 100 or 200 milliamperes or at other currents within this range to provide high lighting levels or lower intensities for many industrial and commercial installations, including hallways, showcases, and railway cars.

The elimination of starters simplified maintenance. Life of Type LS fluorescent lamps at 200-milliampere operation is expected to be comparable to that of 40-watt standard fluorescent lamps. Definite ratings will be published as soon as life-testing is conclusive. Their efficiency, as high as 65 lumens per watt, is considerably higher than previous types.

Also announced by Sylvania is a new 13-watt miniature lamp, in white or daylight, 21 inches long and ⅝ inch in diameter. Approximate initial lumens are 580 for the white and 490 for the daylight. This lamp is of the conventional two-prong, starter type but will require a new ballast for its operation.

RADIO BUYERS TO DESIGN SETS

Radio listeners will help design the new home radios to be produced by Bendix Radio at Baltimore, as soon as the military situation permits, Leonard C. Truesdell, general sales manager of the home radio division of Bendix Aviation Corporation, announced recently.

Betty demonstrates how to get a "line of light" with the new slim lamp.

Collyer

VARNISHED CAMBRIC

THE CABLE WITH A PLUS

When you buy wire and cable, it's the *EXTRA* margin of quality that pays off in *EXTRA* service and reliability. Here at Collyer our business is founded on years of delivering this extra quality.—It's the PLUS that makes Collyer Varnished Cambric Wires and Cables leaders in the field.

Produced by modern machinery and experienced workmen, Collyer Varnished Cambric Wires and Cables have high dielectric strength and exceptionally long life even under difficult operating conditions. Let us know your requirements.

Collyer

INSULATED WIRE COMPANY

Southeastern Sales Representative

FULWILER & CHAPMAN ATLANTA, GA.

Nation-wide surveys of consumer preferences in reception quality, cabinet design, and for other features, such as tuning controls, are now under way, Truesdell revealed. The results will be used as a guide to designers and engineers of the corporation, in giving the postwar radio-buying public what it wants.

"The chassis of the home radios to be manufactured postwar by Bendix will include new technological advances developed through research and improved production techniques during the war," Truesdell said. "Beyond this, we plan to be guided by consumer preferences insofar as cabinet design and convenience of usage is concerned."

Preliminary surveys have already been completed, and surveys to discover sectional differences in preference are now under way, Truesdell said, toward the development of a complete line of popular-priced radio sets designed to provide cabinets and features to suit the widest possible range of public desire.

IMPROVEMENT PROGRAM FOR SOUTH TEXAS

Strengthening of electric service facilities throughout a large area of South Texas will result from several major construction projects now being undertaken by Central Power and Light Company, I. B. Sigler, Lower Rio Grande Valley district manager, announced recently.

The improvement program includes a new 66,000-volt transmission line from Harlingen to Kingsville; conversion of the existing transmission line which follows the military highway from San Benito to Mission to operate at 66,000 volts; and a new 66,000-volt line running north from Mission to connect with the present transmission system.

The new line construction has been approved by the War Production Board. Much of the material required for the job has already been procured, and the remainder is on order with assurance of prompt delivery.

War requirements, industrial growth and population increases are motivating factors in the new construction. Although meeting war needs is the most important consideration now, Sigler pointed out that the improved and expanded power facilities would also be a great asset to the postwar growth and development of the entire valley region.

Completion of the Harlingen-Kingsville line section, about 88 miles long, will give the valley an electric power inlet at each end, Sigler said, along with power supplies available through the company's large La Palma generating station at San Benito. The new line will afford a direct link between La Palma and Nueces Bay Power Station at Corpus Christi, two of the company's major generating plants. An existing line runs from Corpus Christi to the valley by way of Robstown, Kingsville, and Falfurrias, entering the western end of the lower valley near Edinburg. This line connects at Falfurrias with a transmission line extending to Laredo and thence to generating facilities and service areas around Eagle Pass and Del Rio.

Further protection of service throughout the valley area will be afforded by converting the military highway line to higher voltage. Although this line is now operating at 38,000 volts, it was originally built to carry 66,000 volts and will require comparatively few changes to operate at that voltage. Along with this conversion, the military highway line will be connected at its western end with the existing 66,000-volt line which traverses the valley. This connection will require about five miles of new line running north from Mission.

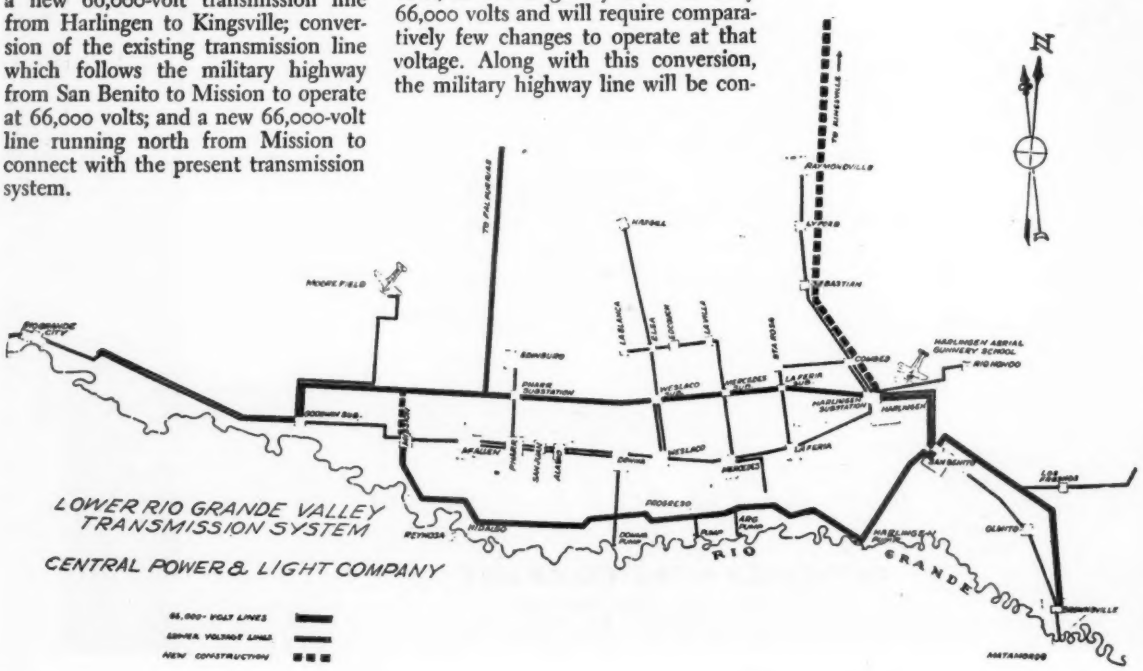
Completion of this work will give the valley an efficient, high-voltage power transmisison loop from San Benito to Mission with power available from several directions and flexible facilities for its distribution. The strengthened system will provide an added safeguard against service interruptions for any reason, as well as overloads.

EASY WASHER ISSUES PLANNING BOOKLET

As part of a program to keep its distributors and dealers alerted to the postwar prospects of home laundry equipment, Easy Washing Machine Corp. has released a new brochure which reviews the company's product and program record of the past, with a declaration of its future thinking.

Being the first formal contact with its distribution organization since Pearl Harbor, the brochure, "What can Easy offer you that no one else can?" features timely statements of management on its peacetime intentions, as well as a message from Easy's divisional managers that wartime restrictions have not impaired the Field Advisory Committee and factory studies of the dealer's postwar merchandising problems.

The brochure, sent to over 8000 dealers, distributors and foreign ac-



...for a Quality Vacuum Cleaner?

We think we know what your answer will be. You don't want to pay any more than you have to for the quality product you insist upon.

That's why we feel sure you will go to your electrical appliance dealer when you buy your next vacuum cleaner.

You see, you can get a Premier from your dealer for less—because your dealer makes it possible for Premier to eliminate the excessive costs of maintaining house-to-house salesmen or any other selling procedure involving home demonstrations and sales concluded in your home. Your dealer is fully equipped and prepared to give you a complete in-the-store demonstration of any Premier Cleaner.

That's why Premier vacuum cleaners will be sold only through dealers.

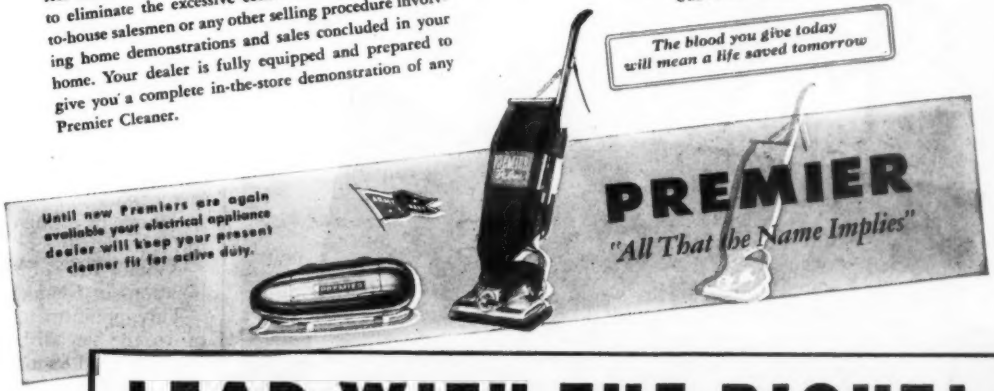
When you buy a Premier from your appliance dealer you will get a long-famous quality cleaner sold only in a way that assures the right price—the fair price—to you.

Before you buy, you'll want to read the full story of "Why You Should Buy Your Next Vacuum Cleaner from Your Electrical Appliance Dealer." Ask your dealer for a copy or write:

Electric Vacuum Cleaner Co., Inc.
CLEVELAND 10, OHIO

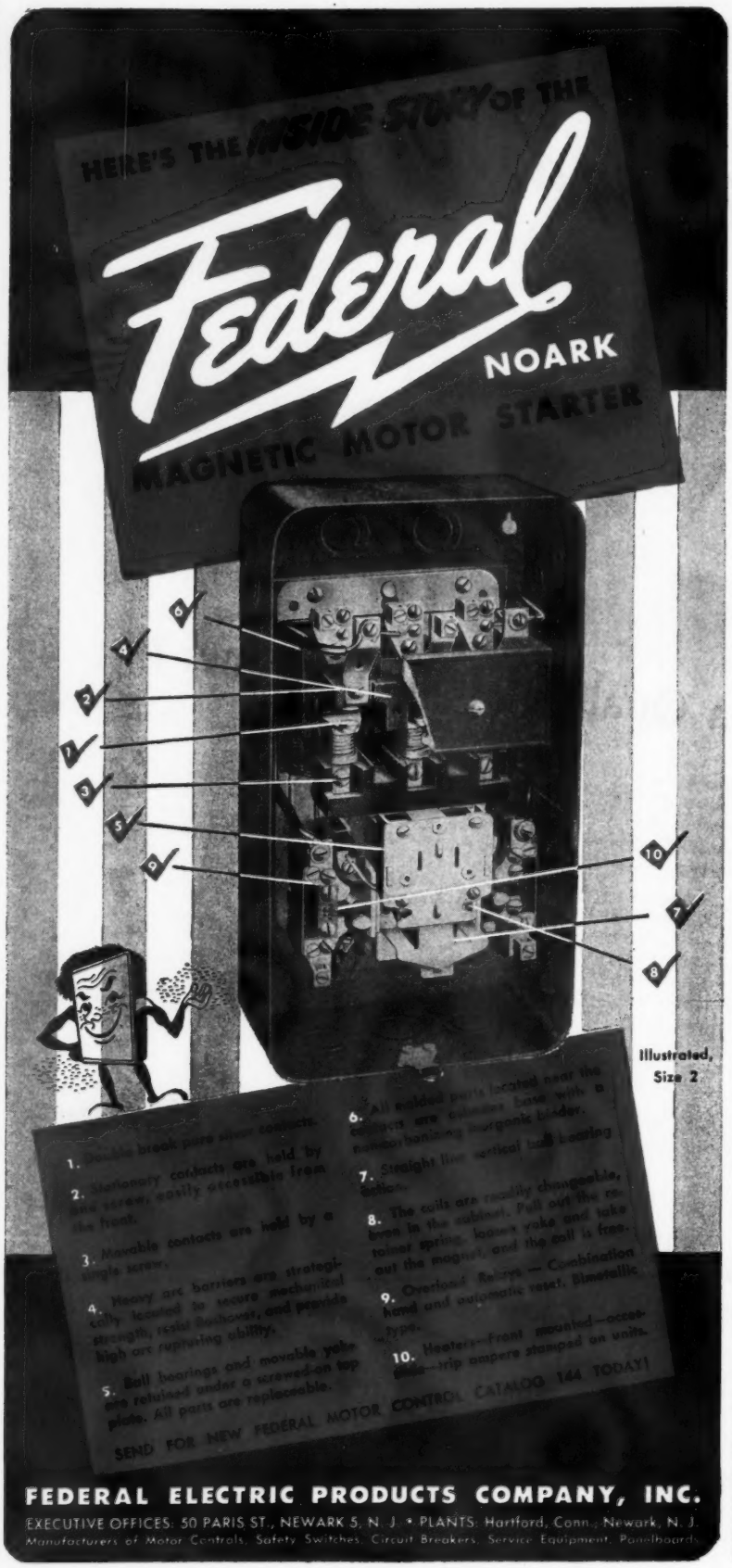
The blood you give today will mean a life saved tomorrow

Until new Premiers are again available your electrical appliance dealer will keep your present cleaner fit for active duty.



LEAD WITH THE RIGHT!

The above reproduction of a full-page color advertisement appearing in the April issue of the Ladies' Home Journal speaks for every Premier dealer—and for itself. It is one of a series also appearing in Good Housekeeping and The Saturday Evening Post. Reprints of the ad, and the booklets offered in it, may be obtained from your Premier distributor or direct from Electric Vacuum Cleaner Company, Inc., Cleveland 10, Ohio.


HERE'S THE INSIDE STORY OF THE
Federal
NOARK
MAGNETIC MOTOR STARTER
Illustrated, Size 2
SEND FOR NEW FEDERAL MOTOR CONTROL CATALOG 144 TODAY!
FEDERAL ELECTRIC PRODUCTS COMPANY, INC.
EXECUTIVE OFFICES: 50 PARIS ST., NEWARK 5, N. J. • PLANTS: Hartford, Conn., Newark, N. J.
Manufacturers of Motor Controls, Safety Switches, Circuit Breakers, Service Equipment, Panelboards

counts, traces the company's 68 years of specializing, its engineering achievements during this period, its unit-of-sale record contrasted to industry averages, its wartime magazine advertising, the results of its postwar planning activity such as the recent "store layout plans"—and a prediction of things to come in the way of sales training materials and improved manufacturing facilities.

In conclusion, the brochure reminds dealers that "the factory is getting ready—how about you?" Listed, are a few practical jobs the dealer can do now to prepare for after victory selling.

BENDIX RADIO APPOINTS FLORIDA DISTRIBUTOR

The Florida Radio and Appliance Corporation, of Miami, a recently formed wholesale and distributing or-

George B. Gray

ganization composed of veteran Florida business and merchandising men, has been appointed distributor for the Bendix Radio division of Bendix Aviation Corporation.

George B. Gray, vice-president and merchandise manager, plans an extensive program of merchandising for the forthcoming line of Bendix AM and FM radios and radio-phonograph combinations in Florida.

This appointment brought to a total of 19 the key distributors who have been assigned to market Bendix radios from coast to coast.

BOOKLET ON FACTS VETERANS SHOULD KNOW

As part of the nation-wide program to protect returning veterans from the countless rackets and fraudulent schemes that promoters use to swindle the unwary, Better Business Bureaus throughout the country are dis-

UPKEEP GOES DOWN with these UNDERGROUND CABLEWAYS

These 5 advantages of TRANSITE DUCTS assure low maintenance

1. *Permanently smooth bore*... long cable pulls and replacements are made easy. Danger of damage to cables is minimized.

2. *Easily and quickly installed*... long, lightweight lengths and simple assembly method assure rapid, economical installation.

3. *Inorganic*... made of asbestos and cement compressed under great pressure. This provides permanence and strength... makes these ducts immune to rust and rot.

4. *Immune to electrolysis*... being entirely inorganic and non-metallic, Johns-Manville Transite Ducts are not affected by electrolysis or galvanic action.

5. *Incombustible*... won't contribute to the formation of dangerous smoke, gases, or fumes. If burnouts do occur, these inorganic ducts provide maximum protection to adjacent cables and permit easy removal of damaged conductor.

For complete details on J-M Transite Ducts, write for Data Book DS-410, Johns-Manville, 22 East 40th Street, New York, N. Y.

TRANSITE KORDUCT *above*—for installation in concrete. Thinner-walled but otherwise identical with Conduit.

TRANSITE CONDUIT—for exposed work and for use underground without a concrete encasement.

Johns-Manville TRANSITE DUCTS JM

Chromy says
"HERE'S WHAT'S COOKING IN 30,000 KITCHENS"
CHROMALOX DESIGN
for better cooking
Cross section of Inconel sheathed tube shows how Chromalox provides maximum contact cooking surface.
It's the CHROMALOX Tubular
It's got SPEED
It's got EASY CLEANING
It's got LONG LIFE
It's got ECONOMY
THE UNIT THAT GETS HOTTER, QUICKER because of its special Chromalox refractory – its heat concentrating baffle, which does not touch the range top, nor transmit heat to it.
Every Chromalox tubular unit on the ranges of your customers is a goodwill representative for you and your service–a constantly active reason why they should give you all their business.
Famous Chromalox Tubulars will soon again be available.
Chromalox Superspeed and Heatflo–to fit any range–are available now.
EDWIN L. WIEGAND CO.
7600 Thomas Blvd., Pittsburgh 8, Pa.
ATLANTA, GA.: C. B. Rogers, 1000 Peachtree St., N.E. —DALLAS, TEXAS: L. R. Ward, 403 Southland Bldg. Annex—RALEIGH, N. C.: W. R. Phillips.
for new ranges and for replacements
CHROMALOX
ELECTRIC COOKING AT ITS BEST!

tributing a newly published booklet entitled "Facts Veterans Should Know Before Starting a Business."

In announcing the publication of the booklet, H. G. Mitchell, manager of the Better Business Bureau of the Atlanta Chamber of Commerce, stated that it was primarily prepared for veterans who intend to go into business for themselves.

The booklet describes many rackets and so-called business opportunity schemes which the veterans, likewise civilians, should avoid; sets forth briefly the requirements for obtaining loans under the G. I. Bill of Rights; points out factors which may cause failure in business and lists various sources of additional information where practical advice on the subject may be obtained.

It was pointed out by Manager Mitchell that a majority of new business ventures do not survive the first year; also, that the biggest single factor in business failures appears to be inefficient management—usually due to failure on the part of the owner to acquire sufficient background knowledge of the business which he operates.

Interested veterans may obtain, free of charge, a copy of this protective fact booklet by writing the Better Business Bureau in care of the Atlanta Chamber of Commerce. The booklet will also be offered for distribution to Army and Navy Separation Centers, local veterans service centers and other points of contact with those in the military services.

COLOR GUIDE FOR INDUSTRIAL INTERIORS

A new and simple color selection guide, which permits persons without detailed technical understanding of color science, to specify correct color shades that minimize fatigue and promote safety, has just been published by The Arco Company, Cleveland. Developed for use in industrial, commercial and institutional interiors, the method enables anyone confronted with a painting job to make his own selections on a scientific basis which insures the maximum benefits obtainable through the use of color.

"We have reduced the answers to all the usual selection problems to 16 short and simple rules which anyone can understand," Howard E. Wise, Arco president, explained. "These rules relate directly to the colors in our 'Optonic' system, including five shades of accurately measured reflection value in each of five colors–blue, green, tan, coral and gray, but they apply to all color selection work."

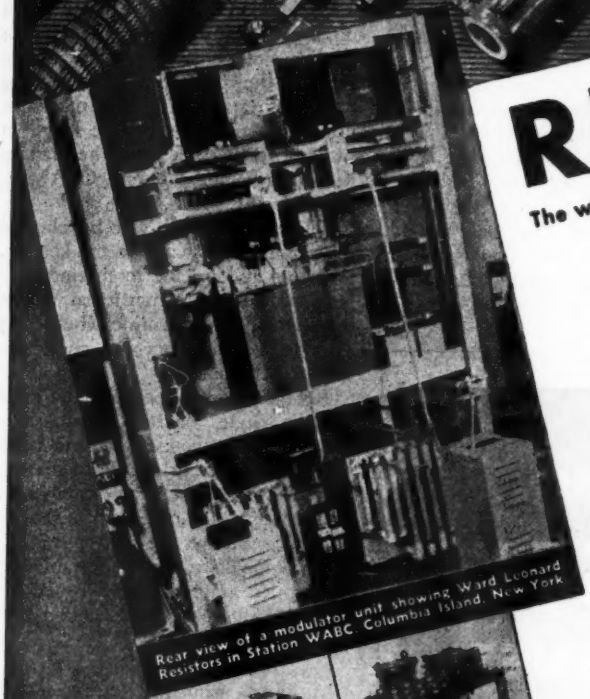
The first eight rules specify the use

RESISTORS

The wire-wound resistor you need is made by Ward Leonard

Ward Leonard resistors include a full range of types, sizes, ratings, terminals, mountings and enclosures. They are built to withstand heat, moisture, vibration and other adverse conditions.

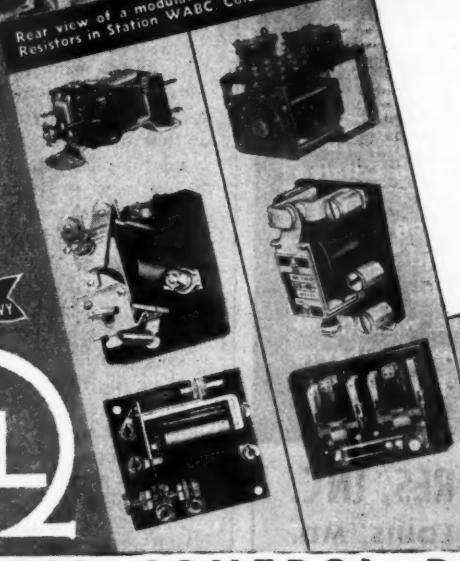
The electrical and electronic industries depend on Ward Leonard—pioneers in the commercial production of vitreous wire-wound resistors—for resistance units to meet each new development. Ward Leonard engineers are always glad to assist in working out special applications.



Rear view of a modulator unit showing Ward Leonard Resistors in Station WABC, Columbia Island, New York

RHEOSTATS AND RELAYS — Ward Leonard is headquarters for electrical controls of all kinds. A comprehensive line of rheostats and relays has been developed hand in hand with the development of vitreous wire-wound resistors.

WARD LEONARD ELECTRIC CO.
37 SOUTH STREET, MOUNT VERNON, N. Y.



ARMY E NAVY

WL

WARD LEONARD

ELECTRIC CONTROL DEVICES SINCE 1892

of colors to compensate for deficiencies in natural and artificial light, which is limited by the direction of window exposure and the type of electric lamps used. The remaining rules guide the choice of shades for work areas, machinery and building equipment on the basis of measured contrasts and reflection value, as well as the selection of more colorful combinations for corridors, cafeterias and other occasionally used employee facilities where contrast with prevailing plant colors encourages relaxation and relieves fatigue.

INSULATING MANUAL

The Mica Insulator Company, 200 Varick Street, New York 14, New York, announces the publication of an 86-page illustrated manual on electrical insulating materials made and marketed by the company. The manual includes data, tables and values on sheet mica, built-up mica, laminated plastics, varnished cloth and tapes as well as miscellaneous insulating materials such as varnishes, twines and fiberglas.

Copy of the manual will be sent on request upon company letterhead.

Government News and Views For the Electrical Industry

EFFORT TO HALT PRICE INCREASES

An industry-wide enforcement drive covering household lamps and lamp shades will be conducted during the February 15-March 31 period in an effort to half price increases to consumers averaging 50 per cent and more above legal ceilings, the Office of Price Administration has announced. The drive is one of a series planned or already completed in the field of house furnishings.

All types of distributors—manufacturers, jobbers and retailers—will be checked for compliance with price regulations, OPA said. In some cases, retail prices of lamps and shades are two or three times what they were during the March 1942 base period. Many retailers report that suppliers are quoting prices as high as those retail stores are legally entitled to charge their own customers.

The purpose of the drive is not only to roll back inflated prices but also to protect against unfair competition the large number of manufacturers, jobbers and retailers who are living up to OPA regulations, OPA said.

Wherever a manufacturer, jobber or retailer is found to be selling at above-ceiling prices, OPA will assert its claim for treble damages and will ask for an injunction restraining the seller from further violations. If a seller cannot produce the required records showing how he established his maximum prices, an injunction will be sought to suspend further sales until he prepares the records and obtains OPA's approval for his prices.

Sellers in general will be checked for compliance with record-keeping, reporting and pricing requirements.

Manufacturers in particular will be investigated to determine whether, in sales to jobbers, they are giving the required discounts.

Retailers and jobbers will be asked for the names of their suppliers to check whether goods were purchased at above-ceiling prices. Retailers and jobbers will be held accountable for any overcharges they have passed along to their customers.

To guide distributors in establishing legal price ceilings, OPA issued the following summary of their obligations under the regulations:

Jobbers

A jobber who was in business in March 1942 is limited to the highest price he charged for the same article at that time. (Amendment 98 to Revised Supplementary Regulation 14.) For a new or changed article, his maximum price is his cost plus his March 1942 markup on the lamp that was nearest in cost, and which he sold at that time. Jobbers not in the business during March 1942 are allowed a specific markup over cost.

Any jobber selling a lamp or shade that he did not buy directly from the manufacturer or for which he does not have a purchase invoice from the manufacturer is required to apply to the OPA regional or district office for an approved maximum price.

Retailers

All retailers are covered by the General Maximum Price Regulation, under

THE IWI MAN
WITH A WISE PLAN carries
ESSEX
MAGNET
WIRE
IWI CATALOG
Saves hours and steps... buy from the IWI Blue Catalog
Specialization in magnet wire problems has enabled ESSEX to develop economical, easy-to-handle and varied wire types for your different needs. They're listed in the IWI Blue Catalog.
INSULATION AND WIRES
SERVICE
INSULATION & WIRES, INC.
2127 PINE STREET • ST. LOUIS, MO.

which a seller may charge his highest price for the same or similar article in March 1942. If he did not sell a "similar" article, he takes his closest competitor's price in March 1942 for the same or similar article. If a lamp or shade is priced by any other method specified in the regulation, a report of these prices must be filed with the OPA district office.

Two lamps are "similar" when materials and workmanship are of approximately the same quality and would have sold for about the same price in March 1942.

PRODUCTION OF ELECTRIC MOTORS STILL CRITICAL

Production of integral horsepower electric motors during the next six to nine months will be as critical as any period in the last two years, was the consensus of members of the Integral Horsepower Electric Motor Industry Advisory Committee and WPB officials at a recent meeting, the War Production Board has announced.

In the last six weeks several top urgency programs involving considerable quantities of electric equipment have been initiated or expanded, and the electrical equipment for these programs will be needed within the next three to nine months, WPB officials explained. Substantial quantities of equipment are being requested for delivery as early as April for orders that are just now being placed. Requirements for these programs can be met only by extremely close cooperation between WPB, the various claimant agencies and members of the industry, officials emphasized. The tight manpower supply together with an anticipated tight supply of materials such as copper and brass strip, sheet and wire, aluminum strip and sheet and steel castings will make increased production difficult, it was explained.

WPB AUTHORIZES RANGE PRODUCTION

Manufacturers who were authorized to produce domestic electric ranges, domestic and commercial electric fans, and electric irons in 1944 but have not obtained the necessary labor clearance for 1945 authorizations, recently were assigned temporary authorizations to continue production, the War Production Board announced.

Production authorizations assigned under the 1944 programs for electric ranges, fans and irons have been cancelled, and any of these items that

(*Continued on page 75*)

starts 'em hot... stops 'em cold

for 30, 40 and 100 watt lamps

THE principal function of a high quality starter is to provide accurate starting of good lamps and positive stopping of dying lamps. And that's what G-E Watch Dog Starters give you.

In addition to other tests, every Watch Dog must light a fluorescent lamp within a few seconds. It's also a precision stopper. When a lamp reaches the end of its useful life, blinking and flickering start but the Watch Dog stops them immediately and positively. Since the Watch Dog cuts itself out of the circuit, this annoying condition cannot possibly recur.

The Watch Dog's precision starting and stopping not only prolong the life of the starter but protect ballasts and reduce maintenance costs. Install G-E Watch Dogs and enjoy economical and efficient fluorescent lighting service.

For additional information write to Section G352-16, Appliance and Merchandise Dept., General Electric Co., Bridgeport, Conn.

BUY WAR BONDS AND KEEP THEM

★

Hear the General Electric radio programs: "The G-E All Girl Orchestra" Sunday 10 P.M. EWT, NBC. "The World Today" news every weekday 6:45 P.M. EWT, CBS.

GENERAL ELECTRIC

PERSONAL NOTES
About Men You Know

J. F. Bailey, president of the Georgia Power and Light Company, has been named a vice-president and director of the Florida Power Corporation. Bailey will retain the presidency of the Georgia property but will make his headquarters in the Florida Power offices, in St. Petersburg. The Georgia property has long been an affiliate company of the Florida Power corporation.

Bailey, a veteran of thirty years in the utility business, has been president of GP&LC for the past seven years. Before going to Valdosta, he was a division manager for Florida Power Corp. He served in various executive positions with utilities in the middle west before joining the Florida-Georgia companies in 1930.

Other officers of Florida Power are: **A. W. Higgins**, president; **Alfred Healey**, vice-president; **E. K. Ilgen-Fritz**, vice-president and secretary-treasurer, and **W. E. Schoeppe**, comptroller.

J. F. Bailey

Responsibility for media in the advertising of General Electric's Apparatus Department products has been assigned to **G. W. N. Riddle**, according to an announcement by **W. V. Merrihue**, manager of the advertising and sales promotion divisions.

Mr. Riddle has been engaged in market research work for General Electric since August, 1943. For 14 years prior to that date, he was on the staff of the chairman of the board, serving under both **Owen D. Young** and **P. D. Reed.** Born in Brighton, England, Mr. Riddle came to the United States in 1922. He was graduated from Harvard in 1929 with the degree of Bachelor of Science, and subsequently received his Master's degree from Columbia University.

* * *

Directors of East Tennessee Light & Power Company have named **Robert M. Boggs**, of Bristol, as secretary-treasurer to fill the vacancy left by **Joe H. Grubbs**, who passed away on December 8 in Bristol after an extended illness. Announcement of the appointment of Mr. Boggs was made by **Charles E. Ide**, president of the company.

Mr. Boggs, who has already assumed the duties of his new office, has had an extended career with the light and power company. Through successive promotions, he has progressed from general ledger bookkeeper, where he started in 1926, through the posts of budget director and assistant treasurer to the top accounting officer of the East Tennessee utility.

* * *

Claude J. Hendon has been appointed manager of sales in the Tube Division of the General Electric Company's Electronics Department, **George W. Nevin**, division manager, has announced. Mr. Hendon's headquarters will be in Schenectady. He formerly was manager of the Southeastern District of the department with headquarters at Atlanta.

Mr. Herndon has been with the G.E. organization since 1927 when he was employed by the Edison General Electric Appliance Company in Atlanta, and a year later transferred to Chicago to become assistant sales manager for small appliances for the company.

Roy N. Fowler and **T. B. Willard** have been appointed to new positions in the General Electric Company's Electronics Department.

Mr. Fowler has been made Southeastern District manager of the department, with headquarters in Atlan-

MIGHTY MIDGET MAKES SALES HISTORY!

The New DUTCH Clothless Pat. Pend COFFEE FILTER is ringing cash registers from Coast to Coast!

Dealers report: "Terrific profit-producer". . . . "Sure-fire sales hit!"..."Best bet of the season!" . . ."Brings women into my store!"

Never before a "natural" like the new DUTCH Clothless Coffee Filter!

The Modern *PRACTICAL* Clothless Filter
- SPARKLING CHINA . . . virtually unbreakable!
- SIMPLE, EFFICIENT . . . no cloth or paper!
- SNAPS IN EASILY . . . can't fall out!

NOW! At no increase in price, every VACULATOR is equipped with the new DUTCH filter.

FREE! Full-color DISPLAY-DISPENSER!

★

BACKED BY A GIANT ADVERTISING CAMPAIGN IN 18 NATIONAL MAGAZINES!

★

If you haven't gotten on this bandwagon, phone or wire your jobber NOW!

HILL-SHAW CO., 311 N. Desplaines St., Chicago 6, Ill. *Sales offices in principal cities*

FLASH! "FREE GOODS" DEAL EXTENDED TO APRIL 30th!

ta, Ga., succeeding Mr. Hendon. Mr. Fowler formerly was electronics district manager in Dallas.

Mr. Willard has been made Southwestern District manager of the department, with headquarters in Dallas, Tex. He formerly was a district representative for the department at Atlanta.

* * *

Herman B. Wolf, superintendent of electrical maintenance for the Duke Power Company, Charlotte, N. C.,

Herman B. Wolf

and **John M. Flanigen**, engineer for the plant accounting department, Georgia Power Company, Atlanta, were nominated for important national offices in the American Institute of Electrical Engineers at the recent winter convention of the Institute in New

John M. Flanigen

York City. Mr. Wolf was nominated for the position of southern district vice-president, and Mr. Flanigen was nominated for a place on the board of directors.

Mr. Wolf is a graduate of the Baltimore Polytechnic Institute. After serving as an instructor at the Institute for one year, he joined Duke Power Company in 1916 as an electrical helper, and later became foreman of electrical construction for

THE IWI MAN WITH A WISE PLAN *knows that*

MALLORY CAPACITORS

Can take it!

Sturdy and strong, built to give good service for a long time, Mallory Capacitors last.

MALLORY CAPACITORS

are Standardized!

So you can meet any capacitor requirements, for round or square types, with less stock on your shelves.

MALLORY CAPACITORS

are listed in the IWI Blue Catalog, to make selection and purchase easy for you. Send for a catalog today

INSULATION AND WIRES IWI SERVICE

INSULATION & WIRES, INC.

2127 PINE STREET • ST. LOUIS, MO.

SAVE TIME—select your conductor fittings from this Catalog . . **ALL** good types

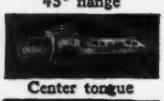
You can buy Tee Connectors, Grounding Clamps, Cable Taps . . . Straight, Parallel, Elbow and Cross Connectors . . . Service Connectors, Bus Supports, Terminals . . . *practically every good type, in the COMPLETE line.*

JUST FOR EXAMPLE— here are some of the standard Penn-Union Vitite terminal lugs:

2-bolt flange

45° flange

Side flange


Center tongue

Round, 45°

Round, 90°

Round, offset

Round, center

These types and many more—in a complete range of sizes. Write for Catalog.

Penn-Union connectors are the first choice of leading utilities, industrials, electrical manufacturers and contractors. They have found that *"Penn-Union" on a fitting is their best guarantee of Dependability.*

L. MORRIS LANDERS
309 Walton Building ATLANTA. GA.
WALTER J. HUEMMER
Dallas Transfer & Terminal
Warehouse Bldg. DALLAS, TEXAS
PENN-UNION ELECTRIC CORPORATION
ERIE, PA.

PENN-UNION
Conductor Fittings

hydro plants, steam plants and substations, and foreman of electrical maintenance. In 1926 he was made general foreman of electrical construction and maintenance. In 1941, he was made superintendent of electrical maintenance with entire responsibility for a system of 3,000,000 KVA in transformer capacity and 1,000,000 KW in generating capacity.

Mr. Flanigen, a graduate of Georgia School of Technology, started his engineering career with the Henry L. Doherty Company in 1919. After serving with several properties of that company, he resigned his position in 1927 as distribution superintendent of the Alliance Division of the Ohio Public Service Company to become associated with the Georgia Power Company. He served the latter company in various capacities in the Operating Department until his appointment to his present position.

* * *

Lee A. Clark, assistant general sales manager, Frigidaire Division, General Motors Corporation, Dayton, Ohio, has announced the appointment of **James F. Pedder** as advertising manager; and **Ellsworth Gilbert**, sales promotion manager of the Frigidaire Division of General Motors, effective immediately.

In making this announcement, Mr. Clark pointed out that these appointments go hand in hand with a realignment of functions, whereby all advertising, display, publicity, promotional and training activities for all Frigidaire appliance, commercial refrigeration and air conditioning products, formerly the responsibility of four different departments, now will be centered in two newly created departments—the advertising department and the sales promotion department, under the direction of Mr. Pedder and Mr. Gilbert, respectively. With this type of organization, all "customer influence" functions for all Frigidaire products are the responsibility of the advertising department. Likewise, all activities designed to inform, train and stimulate the selling organization are the responsibility of the sales promotion department.

J. F. Pedder

E. Gilbert

J. F. Pedder, the newly appointed advertising manager, held the prewar position of assistant advertising manager, and more recently advertising and promotion manager of the Frigidaire Appliance Division. Mr. Pedder has been with the Frigidaire Division in various advertising capacities for more than 17 years.

Ellsworth Gilbert, the sales promotion manager, was formerly sales training manager of the company's Appliance Division. He has been associated with Frigidaire for over 15 years. During this entire period, he has been director of conventions, and prior to becoming sales training manager, was a zone manager for eight years. For the past two years, Mr. Gilbert has been handling important educational assignments in Frigidaire's Industrial Relations Department.

* * *

Lawrence Jennings, regional supervisor of G-E appliance sales to central stations since 1938, has been named assistant to **E. O. Shreve**, vice-president of General Electric in charge of customer relations. In his new position, Mr. Jennings will maintain headquarters in New York.

Mr. Jennings joined General Electric in 1935. Previously he was commercial and merchandise manager of the Eastern Shore Public Service Company, Salisbury, Md., and the Virginia Public Service Company, Alexandria, Va.

Mr. Jennings is a native of Roanoke, Va., attended Washington and Lee University and was with the 338th remount squadron for two years during World War I.

Robert L. Stephenson, formerly with Sweet's Catalogue Service, has joined the Silex Company, of Hartford, Conn., as advertising manager. In this capacity Mr. Stephenson will have complete charge of advertising and sales promotion activities. Mr. Stephenson previously handled merchandising and research for the New York Daily News, was in the advertising department of the New York Times and of Time Magazine; and was a member of the firm of Holens & Stephenson, publishers' representative.

* * *

Dr. **Bennett S. Ellefson** has been appointed assistant to the vice-president in charge of engineering, for Sylvania Electric Products, Incorporated. His office is located at Sylvania Center, Bayside, Long Island. Associated with the company since 1937, Dr. Ellefson has specialized in research on fluorescent screens, special uses of glass, fluorescent powders for cathode ray tubes and specialized war products. He holds a number of United States and foreign patents on fluorescent materials and glass, including certain special war products.

* * *

Robert P. Smith has been appointed general farm sales manager of the Westinghouse Electric Supply Company, with offices in New York, **David M. Salsbury,** vice-president and general manager, announced recently. Mr. Smith returned to Westinghouse after being on a leave of absence with the War Production Board in Washington.

As head of this new department, Mr. Smith's duties will include analysis of farm market possibilities for appliances, radio, and electrical apparatus. He will also study sales organization for dealing with the rural market.

* * *

Buffalo Forge Company announces the appointment of **N. R. Johnson** to the position of factory manager. Mr. Johnson has been connected with the company for 28 years and for a number of years has been general purchasing agent. His outside contacts, as well as a thorough knowledge of the company's products and manufacturing problems fit him particularly well for the new post.

At the same time the company announces the appointment of **H. D. Hebard** as director of purchases. Mr. Hebard has been with the company for 24 years, most of this time in sales work. For the past three years he has been assistant to Mr. Johnson in the purchasing department.

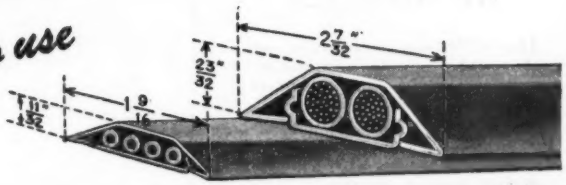
Know your WIREMOLD

BUSINESS BUILDER IN TOMORROW'S MARKET FOR ADEQUATE WIRING

PANCAKE

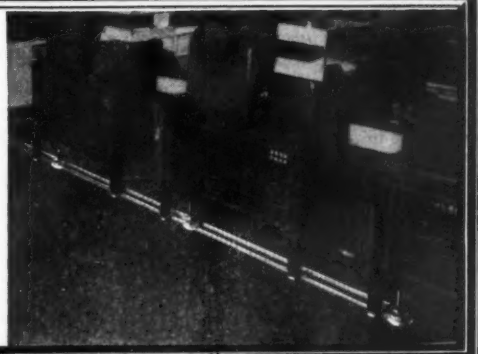
Wiremold Overfloor Wiring Systems No. 1500, Capacity 4 No. 12; No. 2600, capacity 2 26-pair telephone cables. "Flat as a pancake; strong as a bridge."

What to use

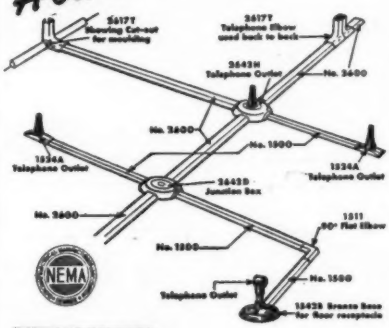


Where to use them

Wherever telephone connections or light, power, or control wiring must be run OVER THE FLOOR to desks, office equipment, benches or machines. "Pancake" is strong and trip-proof with a low ramp angle. It hugs the floor, protects the circuits, makes it possible to install, extend, or relocate wiring quickly and inexpensively.



How to use them



ELECTRICAL CONTRACTORS

Business publications like these, with aggregate circulation of over 240,000 monthly among your prospects and customers, carry Wiremold advertising messages designed to HELP YOU BUILD BUSINESS. Tie in with this aggressive promotion program.

Typical Installation drawing shows the use of "Pancake" raceways and fittings. Raceway base is simply cut to length and fastened to floors, with slip-joint connection to fittings at required locations. Wiring is laid in place and cover sections snapped on to complete installation. Write us for bulletins and data sheets . . . know and use this better, modern way to solve difficult wiring problems.

THE WIREMOLD COMPANY,
HARTFORD 10, CONN.

WHAT IF YOU HAD TO KEEP TRACK OF THEM ALL

The 6750 manufacturers of electrical products, components and accessories, make untold millions of items for the electrical industry.

Their catalogs present a bewildering variety of types, uses, sizes and prices.

To help you pick and choose what's best for your job is one reason why electrical wholesalers were born.

These wholesalers make it their business to help you in two ways:

(1) To recommend and supply you with standard electrical materials.

(2) To keep you posted on new developments in the industry—improved designs, and short cuts that make construction work more profitable and maintenance and repair jobs easier.

Why not set up a working relationship with your local wholesaler. Profit by his personal attention to *all* your electrical needs.

All T&B products are distributed exclusively through the service organizations of T&B Electrical Wholesalers.

The Thomas & Betts Co.,
Incorporated
Room 423
Citizens & Southern Bldg.
Atlanta 3, Ga.

The Thomas & Betts Co.,
Incorporated
P. O. Box 2372
Charlotte, North Carolina

The Thomas & Bett Co.,
Incorporated
518 Masonic Temple Bldg.
New Orleans 12, La.

T&B
THE THOMAS & BETTS CO.
INCORPORATED
manufacturers of electrical fittings since 1898
ELIZABETH, 1, NEW JERSEY
In Canada: Thomas & Betts Ltd., Montreal

NEW EQUIPMENT and MATERIALS

NEW LIGHTING FIXTURE

A new type of fluorescent lighting fixture, equipped with the E-Z Servicer designed to do away with the inconvenience of maintenance of conventional fixture, has been announced by R. & W. **Wiley, Inc.**, Dearborn and Bridge Streets, Buffalo 7, N. Y.

The new fixture, protected by U. S. patent, is hinged so that one man can open it for cleaning or changing tubes.

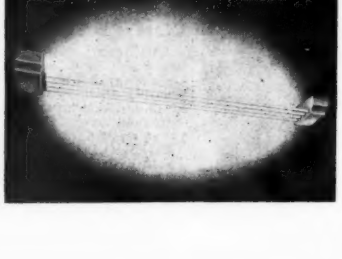
No tools are required; both hands are left free. In large industrial installations, especially, much manpower and labor cost is to be saved with this extra convenience.

The E-Z Servicer fixture is now made in four models including both ribbed glass glare shield and louvered types, industrial and commercial designs with 2, 3 and 4 tubes and starter or instant type ballast. It may be installed either in single ceiling fixture or in continuous runs.

COLOVOLT LAMPS

A new commercial lighting fixture employing 93-inch fluorescent cold cathode low voltage lamps is now available. The manufacturer states that in addition to the eight-foot fixture, assemblies are also available for continuous line lighting. The "Simplicity" units are equipped with the 10,000 hour "Colovolt" lamps which are instantaneous in starting and do not flicker. The manufacturer assures that the advantages of the long life expectancy of the Colovolt lamp may be realized, even when the lamps are frequently turned on and off.

For further information write to General Luminescent Corporation, 638 South Federal Street, Chicago 5, Illinois.



INSULATION TESTER

A compact, direct-reading insulation tester, known as Model 796, which provides complete insulation and resistance tests up to 200 megohms at a test potential of 350 to 500 volts d-c, has recently been announced by the Weston Electrical Instrument Corporation, 617 Frelinghuysen Avenue, Newark 5, New Jersey.

HELWIG SPEER
Carbon Products

Multiflex Brushes
Give
Better Commutation
Longer Life
Less Commutator Wear
That Extra Demand Required
Better All Around Performance
KEEP THE BONDS YOU BUY

HELWIG COMPANY
2544 NORTH 30th ST., MILWAUKEE 10, WIS.
Southern Offices:
323 Northwest Second St.,
Oklahoma City 2, Oklahoma
Telephone: 2-6881
2005 McKinney Avenue, Houston 3, Texas
Telephone: Preston 1610

New convenience, and unsual time-saving facility are claimed for this instrument because it eliminates the necessity for crank turning. Leakage tests can readily be made in cramped quarters or other hard-to-get-at places, the operator always having complete freedom of both hands such as when using any other direct-reading electrical instrument.

Although the test potential is 500 volts at the terminals, the current is

only a few microamperes thus making it impossible for the operator under normal conditions to receive any harmful shock.

This new insulation tester operates from self-contained, long-life lightweight batteries, and has no vibrators or tubes to replace. The overall size is only 8x8⅜x9 inches, and weight but 15 lbs. It also can be used for general resistance measurements from 10,000 ohms to 200 megohms.

TWO NEW TACHOMETERS

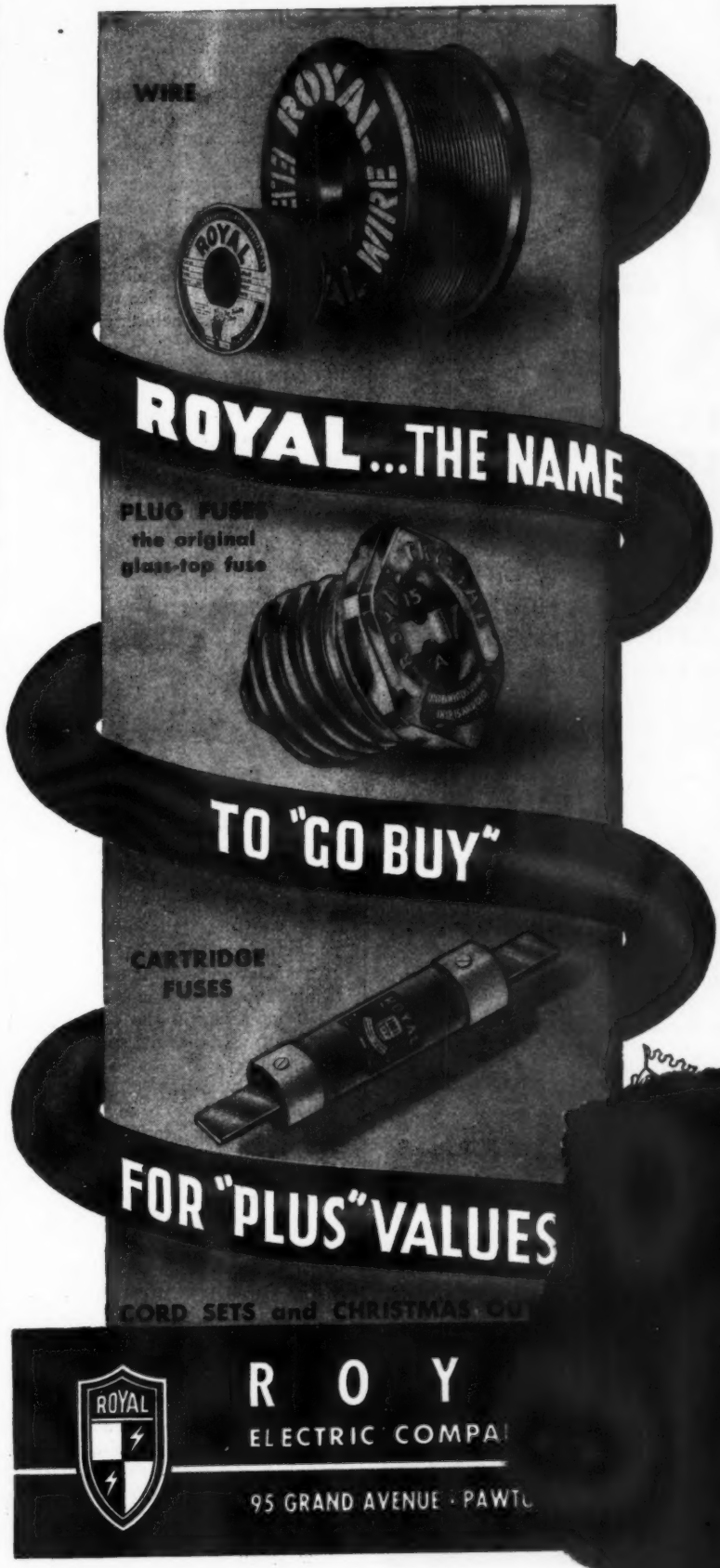
The Herman H. Sticht Co., Inc., of 27 Park Place, New York 7, N. Y., has just issued a new tachometer Bulletin No. 760, describing the model J triple range hand tachometers of centrifugal type.

The new tachometers have been added to the line of triple range hand tachometers, namely: catalog No. 1412 which combines in one instrument all speeds from 100-12,000 r.p.m.; and catalog No. 315, an instrument suitable for all speeds from 300-15,000 r.p.m.

These are instruments with an accuracy of 1% of full scale reading, designed for heavy duty service. All these tachometers are completely ball-bearing and require no lubrication.

NEW ELECTRIC IRON

The Tennessee Valley Associated Marketers is now marketing a new type of electric iron under the War Production Board Program. The new



"Mr. Tops," The Paragon Symbol of Top Quality.

LET "MR. TOPS" CONTROL YOUR TIMING of

***Automatic* HEATING, VENTILATING, LIGHTING, PUMPING OR FLUSHING OPERATIONS . . .**

Paragon 700 Series Time Switches are equipped with 6" calendar dials which make one complete revolution every 7 days. Dial trippers can be independently set for different daily ON and OFF schedules. Settings can be made in advance for an entire week. Any day or days operations may be omitted entirely on a pre-set program.

Each day of week clearly separated from other days; graduated into hours and half hours; day and night distinctly separated. Operations from ON to OFF or from OFF to ON can be set as close as three hours apart and can be separately adjusted throughout each 24 hour day in the week.

Write for a complete bulletin.

Paragon 700 Series Time Switch

MPANY
lding

n Chicago
QUIPMENT SINCE 1905

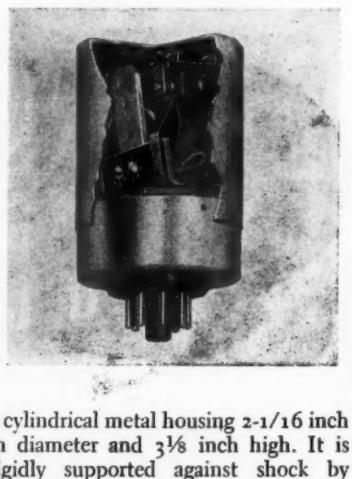
product will have 36 square inches of ironing surface, assuring faster ironing and less operating cost. It has a permanently attached cord with sealed-in steel unit. The weight is five pounds, wattage is 615 and voltage is 110.

"Marketing of the new iron is another outstanding advancement in our organization," said Wheless Gambill, Jr., of the Tennessee Valley Associated Marketers, of Nashville. "We have strived during these difficult years to keep our dealers supplied with diversified merchandise wherever possible."

PLUG-IN RELAY

A new relay of the plug-in type, enclosed in a metal can and fitted with a standard octal plug base has been announced by Ward Leonard, of New York.

The relay mechanism is encased in

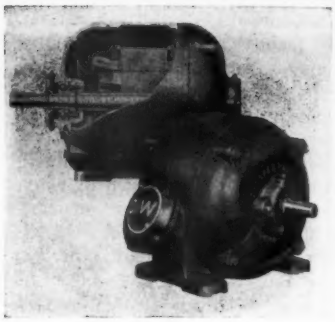


a cylindrical metal housing 2-1/16 inch in diameter and 3⅛ inch high. It is rigidly supported against shock by means of a key in the center of an insulating disc that fits snugly in the top of the case.

The relay, made to operate on standard voltages up to 115 volts, A.C. or D.C., is a modification of a popular type of unit used in small radio transmitters, aircraft control circuits, and similar applications where space is limited. Double pole, double throw contacts are rated 4 amperes at 115 volts, 60 cycle A.C., and at 24 volts, D.C., ½ ampere from 25 to 115 volts, D.C.

PROTECTED TYPE MOTOR

A new motor, combining the surplus capacity of the conventional open motor with protection against dripping liquid, falling metal chips and other foreign matter, has been developed by the Crocker-Wheeler Division of Joshua Hendy Iron Works, at Ampere, New Jersey.



Rated 40 C rise, full-load continuous duty, with a 15 per cent service factor, Protected-Type motors provide added protection at open motor prices. At present, these motors are available in sizes up to and including the 284 frame. Mounting dimensions conform to the standards of the National Electrical Manufacturers Association.

There are no openings in the frame or shields above the horizontal center line. This, together with the shielded construction of the ventilating openings, makes Protected-Type motors suitable for machine tool and similar applications where other types of enclosures have been required in the past.

FOLDING **DOUBLE** CUPPED
★ WASHER LUGS ★
A SIZE and TYPE *for every need!*

WRITE FOR BULLETIN 8-DF
K&H KRUEGER & HUDEPOHL
Solderless Terminal Lugs and Connectors
VINE AT THIRD—E.S. • CINCINNATI 2, OHIO

RANGE UNIT BULLETIN

A new 12 page bulletin (No. CF-145) features Chromalox replacement range units for all electric ranges. It sets forth how to order and install Chromalox Range Units and furnishes complete charts of replacement data for every electric range in use. Available adaptor rings, ring elements and replacement parts for Chromalox Units are listed in detail for benefit of service departments. A section is devoted to Chromalox Hot Plates. Edwin L. Wiegand Company, 7600 Thomas Blvd., Pittsburg 8, Pa.

MITCHELL LIGHTING PRIMER

What is a foot-candle? What is meant by "surface brightness"? How are fluorescent fixtures made? Why is fluorescent so popular? . . . These and many similar questions had been asked with such increasing frequency by new employees of the Mitchell Manufacturing Company, manufacturers of fluorescent lighting equipment, that the company decided to do something about it. Answering questions individually was neither practical nor conclusive. So they wrote and published a rather unique effort called the "Mitchell Lighting Primer" which attempts to explain, in the simplest possible way, what the lighting business is all about, and gives a "dictionary of terms" for the edification of their employees. The Primer lists many of the technical and semi-technical terms used in the lighting industry, includes a short layman's history of lighting, and an a-b-c explanation of lamps and fixtures, how they are made, sold, distributed.

While Mitchell's Lighting Primer originally was intended only for its own employees, when a few dozen copies were circulated among executives of electrical wholesalers and utility lighting companies, the reception was as enthusiastic as it was unexpected. Apparently these companies, too, had the same problem of educating their new employees and a work of this kind was very much needed. As one executive of a national electrical distributing organization put it "Here is just the thing our new salesmen, clerks and other workers can use to great advantage, as it gives them a rudimentary, working knowledge of the lighting business, which they can obtain nowhere else in such a short time and in such concise, easily understood form. Send us 26 copies please."

Feeling that many other manufacturers, distributors and utility lighting companies may see the need of something similar for their own employees, Mitchell will gladly send a free copy

A TWO OR THREE LAMP LOUVERED FLUORESCENT UNIT DESIGNED FOR LONG CONTINUOUS RUNS WITH NEAT, COVERED REFLECTOR JOINTS.

The Curtis 1682-C

Specifically designed and engineered for high utilization . . . ideal for long, continuous lines of light over work benches where high precision work is done.

This unit has a slightly narrower and deeper reflector, providing better shielding, and a practical and substantial Fluracite-finished steel louver.

Available in continuous runs or individual units. Corresponding unit less louver is Catalog No. 1672-C. Three-lamp units also available, Catalog Nos. 1673-C. and 1683-C. Write for specification sheet on these units.

CURTIS Lighting, INC.
6135 WEST 65TH STREET, CHICAGO 38, ILLINOIS

"EFFICIENCY" DEVICES FOR CONDUIT AND CABLE SUSPENSION

EFFICIENCY INSULATOR SUPPORTS
....Eliminates Drilling or Burning Holes in Beams....Lasts Indefinitely!

● This support is designed for supporting porcelain and glass insulators to beams and angles in open steel construction of all kinds. Because it clamps tightly, making a positive support, the Type K Support requires no burning or drilling.

The head is threaded to receive a set screw which imbeds itself in the beam or angle when tightened. The Efficiency "K" support is made of high quality malleable iron; furnished with case hardened cup point screws . . . sizes 1" to 2½".

♦

Write today for your copy of the latest EFFICIENCY Catalog No. 38B. Contains complete construction and application data on all EFFICIENCY Devices.

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ELECTRIC AND MANUFACTURING CO.
MANUFACTURERS OF EFFICIENCY ELECTRICAL DEVICES FOR CONDUIT, WIRE AND CABLE SUSPENSION
EAST PALESTINE, OHIO

Reduce Lamp Replacement Costs by Safety Locking Against Vibration Difficulties

LOCK LAMPS SECURELY IN PLACE WITH FLUR-O-LOCKS, the economical patented lock for fluorescent fixtures thereby assuring perfect electrical contact and reducing current waste through elimination of vibration.

INSECURE INSTALLATIONS WASTE MONEY. FLUR-O-LOCKS tend to increased efficiency of lamp, starter, and ballast and are economical and easy to install.

FALLING LAMPS MAY CAUSE DAMAGE SUITS from employee's injury or produce bottlenecks in production due to damaged machinery.

SOLD AND WAREHOUSED BY LEADING DISTRIBUTORS. FLUR-O-LOCKS are at present installed in over 5,000 leading industrial plants and sold by leading distributors in U. S. and Canada.

Write for Free Samples and Folders

Flur-o-Locks by
LADUBY COMPANY

of his Primer to any executive who writes for it. Write Mitchell Manufacturing Company, 2525 Clybourn Avenue, Chicago 14.

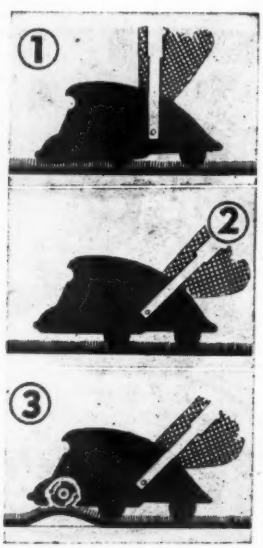
MATHO-MATIC NOZZLE

The Matho-Matic Nozzle, an exclusive feature of the new Premier Vacuum Cleaner to be manufactured after reconversion is a completely automatic vacuum cleaner nozzle that assures scientifically exact adjustment of the cleaner to any floor covering.

Since correct adjustment of the vacuum cleaner nozzle to the rug is essential for best results in cleaning, the Matho-Matic Nozzle has been designed to adjust itself automatically with mathematic precision to the current distance above the rug, making the combination of powerful suction and motor-driven brush agitation effective to the maximum degree.

In operation, the new Premier lifts the rug slightly from the floor and seals it to the Matho-Matic Nozzle, where the rug is gently vibrated on a cushion of air and brushed free of all embedded and surface dirt, which is then instantly drawn into the bag. It is the Matho-Matic Nozzle's correctly set distance from any rug that insures perfect sealing of rug to cleaner for increased efficiency in vacuum cleaning.

The adjustment steps are shown in the illustration: (1) As cleaner rests on rug with handle in vertical position, Matho-Matic Nozzle pushes down into nap of rug; (2) With handle pulled back, Nozzle automatically rises to mathematically exact height for most efficient cleaning; (3) In operation, perfect suction seal is created on a cushion of air on which rug is vibrated and thoroughly cleaned.



WAKEFIELD CATALOG

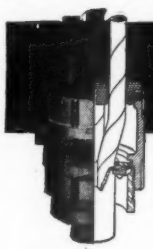
The lifting of manufacturing restrictions on commercial fluorescent lighting equipment has made the Wakefield "Grenadier" again available, subject however, to priority regulations.

A new 8-page catalog section (No. 11-44) giving dimensional data, photometric performance, and layout design helps has just been issued by the manufacturer, the F. W. Wakefield Brass Co., Vermillion, Ohio. Copies are available on writing to the company.

NEW TECHNICAL BOOKS

A new catalog of technical books has just been issued by the Chemical Publishing Co., Inc., 26 Court Street, Brooklyn 2, N. Y. This catalog includes the latest books on chemistry, technology, physics, general science, mathematics, engineering, foods, formularies, drugs and cosmetics, gardening, medicine, metals, technical dictionaries, etc.

A copy of this catalog will be sent free to everyone who is interested in keeping up with the latest technical and scientific progress by writing to the Chemical Publishing Co., Inc., 26 Court Street, Brooklyn 2, N. Y.



O. Z.

2500 VOLT TERMINATING POTHEADS

For Indoor Use

Designed for indoor use on conduits or exposed cables, this O. Z. terminating pothead is one of a complete line for all types of cables up to 2500 volts. The O. Z. line also includes 750 volt potheads for both vertical and horizontal use along with a complete selection of Sealing and Compound Bushings.

Write for your copy of the 144 page O.Z. Catalog. At a glance, you'll find the answer to your needs in Conduit Fittings ...Cable Terminators ...Junction Boxes... Solderless Connectors ...Power Connectors... Grounding Devices.

O.Z ELECTRICAL MFG CO
262 BOND STREET · BROOKLYN, 2 N. Y.

Represented by: M. L. Whitman, 313 Bona Allen Bldg., Atlanta 3, Ga.; W. J. Keller, 304 Natchez Bldg., New Orleans 12, La.; F. B. Ostermueller, 6935 Meadow Lake Ave., Dallas 14, Texas.

7880

WPB Authorizes Range Production

(*Continued from page 65*)

are completed in the first quarter of 1945 will be considered part of the total amount authorized for the first quarter under the 1945 programs. This is in accordance with a WPB ruling that production authorized for 1944 but not completed in 1944 may not be carried over into 1945.

About 35 per cent of the total 1945 production of electric ranges will go to the armed forces and the National Housing Agency, the remainder to institutions and individual consumers who certify need and can show that no additional wiring will be required on their premises.

Application of Capacitors

(*Continued from page 42*)

by the use of reduced voltage starters will be held to a reasonable value, with the possible exception of the manual, auto-transformer type of starter, for which a suggested application procedure has been outlined.

The no load power factor will be approximately 100 per cent and the motor full load power factor will range from 95 to 98 per cent which gives sufficient power factor improvement in most cases. The capacitor rating will range from 20 to 40 per cent of the full load motor kva; the smaller value applies to the high-speed motors

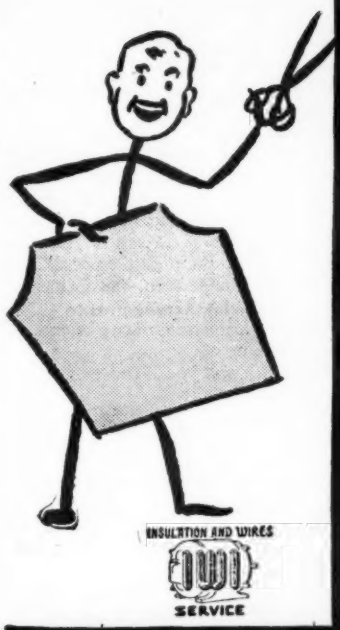
The data are confined to a single table for simplicity for the most common motor sizes in the 220, 440, 550 and 2300 volt rating. Some of the capacitor kva values given in Table I do not conform to the present standard capacitor ratings for all voltage classes, but in such cases the next lower standard rating may be selected.

Motor Shop Uses for Lacquer Thinner

(*Continued from page 34*)

to the machinery, they have a tendency to cause bright metal parts to rust slightly. A small exhaust fan to remove the fumes to the outside should be installed and then there will be no difficulty at all encountered.

This will prove to be one of the handiest additions you could make to your small motor shop, due to the thorough way in which it cleans the parts. It makes possible not only a better appearing and better operating part, but also enables you to re-use many parts that otherwise would be scrapped.



THE IWI MAN WITH A WISE PLAN *finds*

TAYLOR FIBRE

can be tailored to meet customer's exacting requirements.

Fine fibre and phenol fibre available in rods, sheets, tubing and washers.

A variety of grades, sizes and thicknesses, all listed in the IWI Blue Catalog for your picking and purchasing convenience.

INSULATION & WIRES, INC.

2127 PINE STREET • ST. LOUIS, MO.

USED TRANSFORMERS FOR SALE

We offer for sale three 200 KVA General Electric transformers.

Voltage rating, 11,000 — 2300/4000 60 cycle. Good condition, recently taken out of service to be replaced with larger capacity.

For further information write or wire

LIGHT AND WATER DEPARTMENT

CITY OF WEST MEMPHIS

WEST MEMPHIS, ARKANSAS

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CONDUIT BODIES

Gedney Threaded Type Conduit Bodies for Heavy Wall Conduit All Types— Sizes ½" to 4"

Gedney Threadless Type Conduit Bodies for EMT Thin Wall Conduit All Types— Sizes ½" to 2"

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GROUND FITTINGS For armored or Bare Copper Ground Wire —5 Sizes, Taking Ground Pipe ½" to 6"

3-Piece Couplings ½" to 4"

Sold through Electrical Wholesalers

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TEST INSULATION THE MODERN WAY

...WITH A MODEL B-5

MEGOHMER

NEW BATTERY-VIBRATOR TYPE

No more tiresome cranking of a hand-driven generator. Entirely self-contained. Steady test potential of 500 volts D.C. available at the touch of a switch. Direct reading in insulation resistance. Various new models and ranges.

Write or phone for Bulletin 430

HERMAN H. Sticht COMPANY, INC.

27 PARK PLACE NEW YORK, N. Y.

Want to Be a Dealer

(*Continued from page 19*)

Are you going to rely on display windows to attract trade?

Are you going to do direct mail advertising?

Are you going to use handbills?

Are you going to use radio advertising?

Each of the decisions made on these policy questions affects, and is affected by, other situations and decisions. So at each stage it is well to review again the questions raised previously, especially under location, competition, and financing.

Financial Arrangements

Have you made an estimate of the capital you will need?

How much will you invest in merchandise inventory?

How much will you invest in equipment?

How much will you invest in fixtures?

How much will you need to modernize?

How much will you need to pay operating expenses (rent, salaries, supplies, light, etc.) for two months?

How long will it be before the business will start making profits?

Have you funds to pay the operating expenses until the business pays its way?

Have you funds for the salary you will pay yourself during the period the business is getting started?

Have you figured out where, if it is needed, you can get additional capital?

Is there any reserve available for unexpected needs?

Estimate of Sales

What are the sales you can reasonably plan to make the first month?

What are the sales you can reasonably plan to make the first six months?

What are the sales you can reasonably plan to make the first year?

What is the gross profit you can make on this volume of business?

What expenses can you forecast as being necessary?

Is your own salary included in these expenses?

Is the net profit and salary adequate?

The answers to these questions are the acid test, both of the feasibility of the proposition, your ability to finance it, and your desire to go ahead. Everything which has gone before is tested here.

Electrical Wiring For Navy Air Base

(*Continued from page 16*)

this case, comes from another transformer bank, previously installed.

Obviously, a system of this kind would have a high commercial or industrial value, wherever inflammable materials are stored or processed.

In all instances where feed lines are led under ground, they were enclosed in concrete-encased fiber duct Not only did this type of duct material save critical metal, but it served the purpose better in another way. Metal of all kinds deteriorates rapidly, when exposed to salt moisture in air or soil.

Moreover, concrete, unless especially mixed to be water resistant, will absorb from sand or earth a certain amount of moisture which, naturally is passed along to any metal enclosed in the concrete. And, of course, ground moisture near the sea coast will have a salt content. In all, over 12,000 ft. of fiber duct in 3-in. and in 4-in. diameters were used for this job.

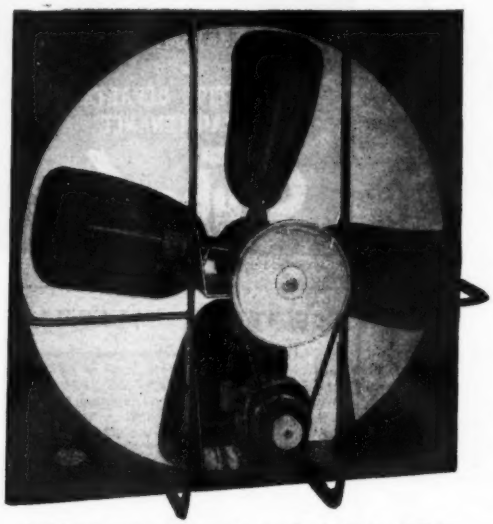
Naturally, in the work of installation, the saving of manpower was a prime objective. By the careful analysis of installation detail and the elimination of lost motion, Miller Electric was able to cut a total of 20% from the number of man hours normally required for doing a job of this type.

In making ceiling installations, for example, an adaptation of the assembly line method made possible a time saving of approximately 10% for that portion of the work. In this case, 40-ft. rolling platforms, each surmounted by a 12-ft. step ladder were employed. Personnel was worked in 3-men teams consisting of two electricians and a helper.

A sign man, accustomed to high work, made the actual installations

Health-aire Belt Driven Propeller Fans . . .

Available in all sizes 24 to 54 inches and capacities 4,500 to 25,000 C. F. M.



Anticipate your requirements now! Write for full details concerning our plan that will supply you with your summer needs.

Backed by 25 years experience in designing and manufacturing propeller fans and blowers, Johnson Health-aire belt driven fans combine the most advanced, the most effective engineering ideas.

For all residential, commercial, industrial and public buildings, also, offices, stores, and all other similar places, Johnson Health-aire fans are guaranteed to give the finest performance.

Available in sizes 24 to 54 inches and in capacities of 4,500 to 25,000 C.F.M.

FEATURES

- All steel welded construction.
- Capacitor, long hour, resilient mounted motors.
- Dynamically and statically balanced for quiet operation.
- Adjustable tension, over-powered drives.
- Rated and tested in accordance with ASHVE and NAFM codes for propeller fans.

JOHNSON Health-aire PRODUCTS Climate as you like it

H. C. BIGLIN, 177 Harris St., N. W., Atlanta 3, Ga.

JOHNSON FAN & BLOWER CORPORATION

Connecting Diagrams for Lap-Wound Induction Motors

The outstanding feature of this useful pocket-size book is the set of 72 modern connecting diagrams for two and three phase lap-wound induction motors, of four, six, eight, ten, or twelve poles. The author, A. C. Roe, a well-known authority on motor rewinding and repair, has endeavored to make these diagrams the most complete and useful of their kind. All of the series connections have been arranged so that they can be used as single or dual voltage connections. The two, three, and four parallel connections are all arranged for best magnetic balance, and so that equalizer connections can be applied to reduce noise, etc. In addition to the diagrams, this 132 page book contains a great deal of other important information on designing windings for induction motors.

This book is available only with subscription to Electrical South—3 years for $3. If you are already a subscriber, send in your renewal or order a new subscription for one of your key men.

ELECTRICAL SOUTH

1020 Grant Bldg. Atlanta 3, Ga.

1915 Sepco 1945

AUTOMATIC ELECTRIC WATER HEATERS

SEPCO HEATERS are backed by 30 years of continuous research and development.

They are designed to provide an economical, efficient, dependable water supply.

Their performance can be attributed to the following important, exclusive features of our own design:

- ✓ *Large area Heating Unit*
- ✓ *Immersion-hydraulic actuated Thermostat*
- ✓ *High efficiency Diffuser*
- ✓ *Servicing without draining tank*

Automatic Electric Heater Co., Inc.

POTTSTOWN, PENNA., U. S. A.

from the top of the step ladder. A second electrician on the platform received and readied materials passed up from the floor by the helper. The latter also moved the platform from one location to the next, as work progressed.

At another air base, the firm made electrical installations to provide service for barracks, a mess hall, a hospital, a flight control tower and a landing field. Electrical equipment for the last named included approach and landing lights, signal devices and various other items of special purpose apparatus.

Tower controlled, the landing field lights operate on high voltage. In order to avoid the obvious hazard to tower personnel of high voltage electricity, a low voltage circuit connects a single-pole switch in the tower control room to a relay at the primary source. Operation of this switch connects high voltage circuit to series-connected, field lighting installations. These are controlled in groups, as desired, by use of selective, single pole switches.

Series connection of these lamps eliminated well over 50% of the wire which otherwise would be required. And, here again, the employment of high voltage made possible the use of a smaller conductor and a consequent further saving in copper.

Besides drawing on its wartime experience as a builder for peace-time business, Miller Electric has still other plans on its reconversion blue print. For one thing, the firm intends to add electrical appliance selling and servicing to its electrical contracting coverage.

To this end, the concern already has made arrangements for suitable store space, adjoining its present location. Having a floor area of approximately 36,000 sq. ft., Miller Electric's new quarters will provide excellent facilities for the display of major and small electrical appliances, for servicing them, and for warehousing surplus stock.

Made His Merchandise

(*Continued from page 11*)

tors and washing machines are not desirable customers. When normal times return again the deadbeat, the skip and the professional demonstrator user will be back again with a new bag of tricks.

Customers you have done business with and know are going to be the best customers and deserve first service, in the opinion of Doherty-Stirling.

Subox
ANTI-CORROSIVE PAINTS
favored for
TRANSMISSION
and
DISTRIBUTION DEPARTMENTS
MAINTENANCE
Subox, Inc.
NORTH ARLINGTON, N. J.

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IF YOU CAN SELL and develop electrical, hardware and mill supply jobbers and are familiar with the SOUTHEASTERN territory, there is a permanent position for you with an AA-1 manufacturer provided you are capable of handling the job and earning from $2,500 to $5,000 a year on a straight salary plus expense basis. The product is an essential electrical item handled through wholesalers in established territories.

If interested in postwar security—write, giving age, experience, draft status, present earnings and reason for your interest in this opportunity. Box 601, care ELECTRICAL SOUTH, Grant Bldg., Atlanta 3, Ga.

IF YOU ARE DOING WAR WORK NOW WE ARE READY TO WORK WITH YOU ON YOUR PRODUCT OF TOMORROW

Our highly trained staff of experts can assist you in the design, engineering, and sale of your product. We are equipped to help you create new, and improve old products; design informative labels; inject new ideas in your packaging and merchandising. We have had thirty years of experience in selling chain stores, department stores and jobbers—have an attractive showroom and office and experienced personnel skilled in checking competition. If you are interested in postwar sales volume and profits, write to: Malina & Associates, 1140 Broadway, New York 1, N. Y.

M. & W. WATER-TIGHT RUBBER BUSHING TYPE CONNECTORS FOR SERVICE ENTRANCE CABLE

The design of the rubber bushing is such that it has a greater surface contact around the cable than the conventional bushing, assuring a water-tight fit around the cable.

Send for Copy of Bulletin 14 which illustrates our complete line.

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EAST PALESTINE • OHIO

WANTED

Electrical and Mechanical Engineers for design and application engineering of fractional horsepower induction motors. Address Supervisor of Technical Employment, 306 Fourth Avenue, Pittsburgh, Pennsylvania.

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UNIVERSAL TOOLS • IMMEDIATE DELIVERY

Pipe Wrench
Channellock Pliers
Adjustable Wrench
Cee Tee Pliers
Diagonal Cutters
Hammer
Screwdriver
Vise-Grips
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$19.85 10 PC. Set.

Remit with Order—Catalogue Free with First Order.
Remember: *We have it—Can get it—Or it isn't made.*
Mail your order Today!! DON'T DELAY.

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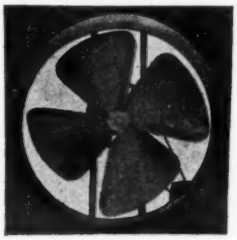
Channelock Pliers, Crescent Wrenches, Vise-grips, Open-Box Sockets, Needle Nose, Pipe Wrenches, Diagonals, Screw Extractors, Screwdrivers, Pullers. Prompt Shipment. Order today. C.O.D. Catalog Free. Dealers Tool Supply, Dept. E.S., 1527 Grand, Kansas City, Missouri.

THE "*Fresh-Air* MAKER"



provides fully the comfort and ventilation so essential in army barracks, mess halls, hospitals, headquarters, theaters and other military buildings. Its fine design and sound construction meet the specifications drawn for army fans and it is particularly adaptable to the various types of installations found in army buildings.

HY-DUTY BLOWERS

Single Inlet—Double Inlet. 400 CFM to 12,500 CFM.

Single Inlet Blower illustrated at left is particularly adapted for ventilation of mess halls in military establishments.

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FOR THIS STARTER
In the *RED PLASTIC* can
IT LEADS THEM ALL

PAT. NOS. 2200443 - 2228210

Locks Out---Resets Automatically

1. Positively cuts out deactivated, flickering, blinking lamps.
2. When trouble is detected the starter automatically cuts off current to the ballast and lamp.
3. Gives long life to ballast because defective lamp is locked out. Prevents overheating.
4. When Lloyd AUTOMATIC locks out defective lamp—Turn off the current—Remove defective lamp—Put in a new lamp. Allow at least one minute to make the above change of lamps. Turn on the current. The starter automatically lights the new lamp. NO NEED TO DO ANYTHING TO STARTER.
5. Lloyd NEW PLASTIC CAN has higher dielectric strength, is stronger, lighter, distinctive.
6. Knurled rim on plastic can insures positive grip for insertion and removal of starter.
7. Plastic can is sealed. No projecting lugs to cause trouble.
8. The life of the AUTOMATIC starter is many times greater than that of the average lamp.
9. It saves maintenance costs and power consumption, protects and insures longer life to the ballast and lamp.
10. Tested in production and prior to shipment to insure perfect performance.

Lloyd Automatic Available in FS-40 and FS-100

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IT'S THE

HOME OF THE FAMOUS
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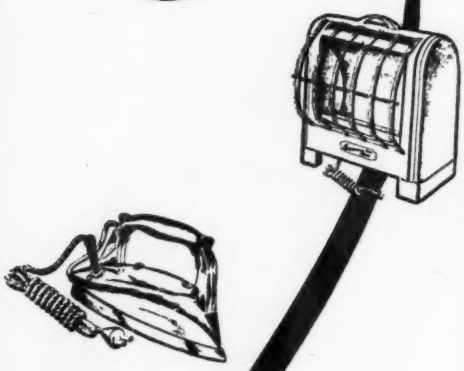
RADIO IN EVERY ROOM
FIVE FINE RESTAURANTS
CENTRAL DOWNTOWN LOCATION

Your LINE of PROFIT



TOP LINERS

Fast selling DeLuxe electrical appliances. Designed to fill every electrical need in the post-war home. Top-Liners all!

Now Available: Step stools, Cabinets, Housewares, Toys and the New Rocket Sulky. Write for details today.

TOP LINE
HOME APPLIANCES

TENNESSEE VALLEY ASSOCIATED MARKETERS

GAMBILL BUILDING, NASHVILLE, TENNESSEE

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